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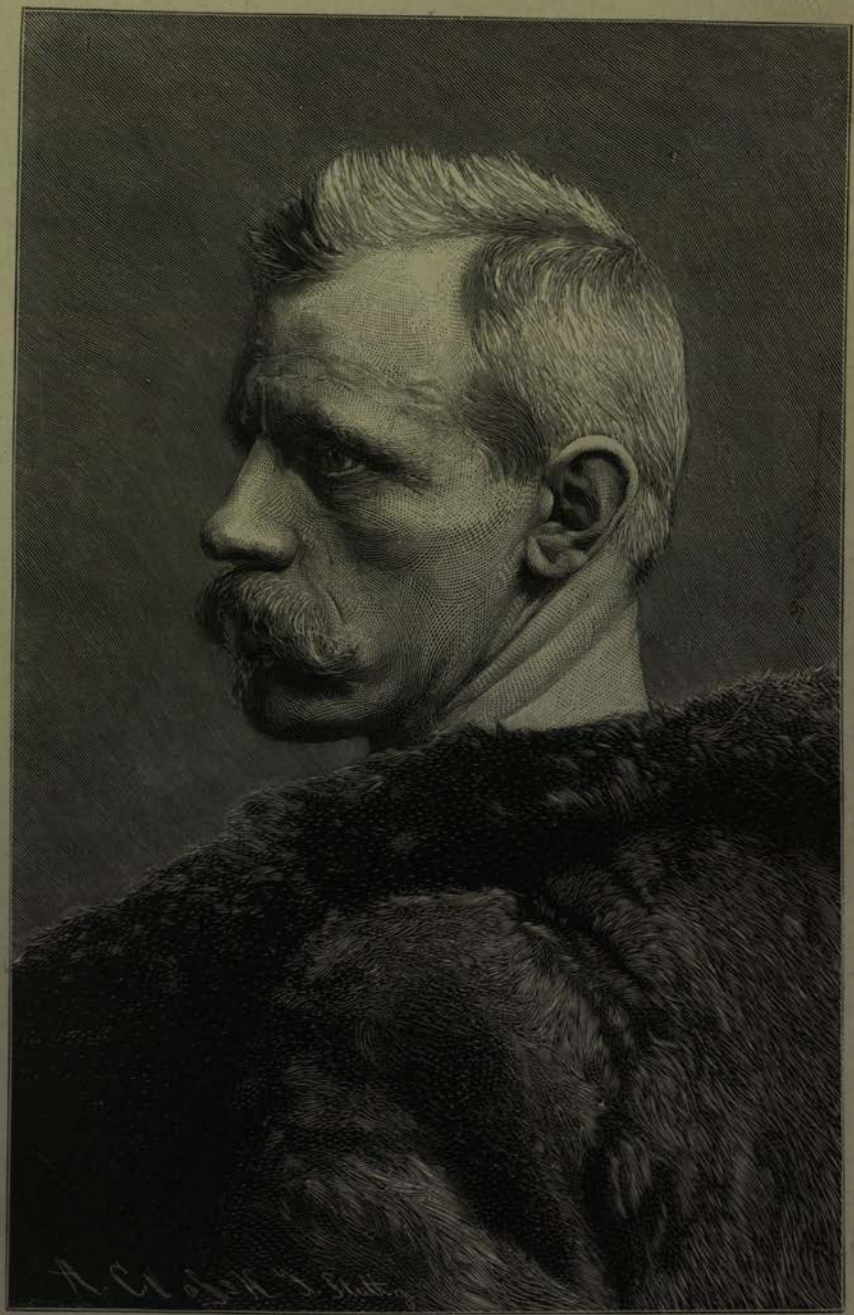
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FRIDTIOF NANSEN

(*From a photograph*)

FRIDTIOF NANSEN

1861—1893

BY

W. C. BRÖGGER AND NORDAHL ROLFSEN

TRANSLATED BY

WILLIAM ARCHER

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WITH NUMEROUS ILLUSTRATIONS AND MAPS

LONGMANS, GREEN, AND CO.
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PREFACE

WHEN I read and began to translate the following pages early last summer, I could not but feel that the authors were somewhat over bold in assuming as a matter of course a fortunate issue to Fridtiof Nansen's latest enterprise. I could not but wonder, here and there, whether Fate might not already have written an ironic comment on some of their serenely confident forecastings. Events have entirely put to shame my apprehensions. Fridtiof Nansen has done what he set forth to do, and has practically solved the enigma of the polar regions. If it be objected that he has not reached the Pole itself, let me simply refer to his own words before the Royal Geographical Society, cited upon page 282 of this volume. To stand upon the axis of the earth is in itself no very great matter. Nansen or another will do this also in due time. What Nansen has done, in the teeth of scepticism and discouragement harder to face, perhaps, than the Arctic ice-pack and the month-long night, is to lead the way into the very heart of the polar fastnesses, and to show how, with forethought, skill, and resolution, they can be traversed as safely as the Straits of Dover. While other explorers have crept, as it were, towards the Pole, each penetrating, with

incredible toil, a degree or two farther than the last, Nansen has at one stride enormously reduced the unconquered distance, and has demonstrated the justice of his theory as to the right way of attacking the problem. Nor is this the crown of his achievement. As the Duke of Wellington 'gained a hundred fights, and never lost an English gun,' so Nansen has now come forth victorious from two campaigns, each including many a hard-fought fray, and has never lost a Norwegian life. We have only to read the tragic record of Arctic exploration in the past to realise the magnitude of this exploit. It is in no way lessened by the fact that Nansen has profited by the hard-earned experience of his predecessors. On the contrary, it is the chief glory of this expedition that absolute intrepidity went hand in hand with consummate intelligence. The following account, then, of Fridtiof Nansen's character and training cannot but be read with all the more interest, since events have so amply justified his countrymen's confidence in his genius and his 'lucky star.'

W. A.

LONDON: *September* 26, 1896.

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LIFE OF FRIDTIOF NANSEN

CHAPTER I

ANCESTRY [1]

NEARLY three centuries ago, in the same Polar darkness which has now, winter after winter, brooded over Fridtiof Nansen and his ship, a boy of sixteen watched the Northern Lights shimmering and shooting over his head. In his eyes they were 'vapours which the sun draws up from the earth into the air, some in the upper, some in the lower atmosphere. They then become ignited and burn; whence the many fiery marvels seen in the skies.'

It was Fridtiof Nansen's ancestor, Hans Nansen,[2] who had come to the White Sea in his uncle's ship, hailing from Flensborg—in those days quite an adventurous enterprise. They had practically no charts, they were scantily supplied with instruments, and they had to keep cannon and cutlasses in readiness. In the course of the voyage, indeed, they had been twice overhauled and plundered by the English. Now they were fast in the ice at Kola. But the intelligent boy, eager for knowledge, did not permit himself to

[1] See *Dansk historisk Tidsskrift* 3 R. I; *Personalhistorisk Tidsskrift*, 1892; Yngvar Nielsen, *Grev H. Wedel Jarlsberg* I.

[2] Hans Nansen was born November 28, 1598, at Flensborg, his father's name being Evert Nansen, his mother's Maren Pedersdatter.

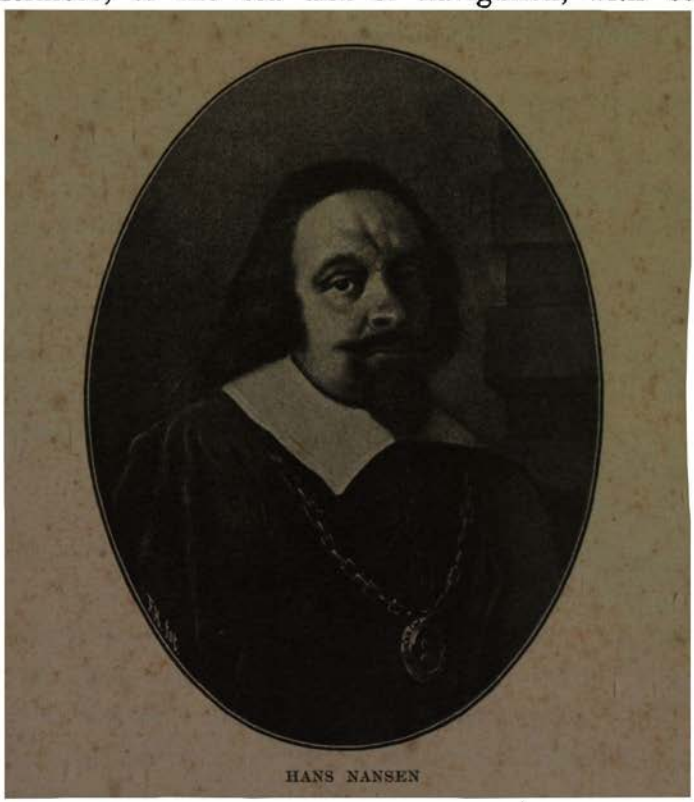
be depressed. He employed the time in learning Russian, and in the summer, when the uncle bent his course southward again, his nephew did not accompany him. He preferred to stay behind and learn more. He travelled alone 'through several districts of Russia to the town of Kuwantz.' From Kuwantz [1] he took ship in September for Copenhagen.

His character came early to maturity, and his powers could not brook inaction. He had not completed his twenty-first year when King Christian IV. placed him at the head of an expedition to the rich fur regions about the Petschora. But the ice was too much for him. He had to make up his mind to winter at Kola. Here he received a commission from the Czar of Russia, and undertook, by imperial order, an exploration of the coast of the White Sea. Not until he reached Archangel did he rejoin his ship.

After that he held a command for eighteen seasons in the service of the Iceland Company. He was by nature a keen observer and a born leader of men, full of alert practicality, and yet with a strong literary bent. And he was eminently disposed to share with others the fruits of his reading. 'When I had nothing else to do,' he writes, 'I copied out extracts from the Bible, and from various cosmographical and geographical works, to serve as an index and common-place-book for future reference. . . And when, a little while ago, I read it through again, I thought that perhaps there might be others who would be glad to know these things, but who, on account of other occupations and so forth, had neither time nor opportunity to study the great works on cosmography. For the benefit of such persons I have given to the press this brief digest.' The title ran: *Compendium Cosmographicum*; being a short description of

[1] Possibly Kowno, at the confluence of the Wilna with the Niemen.

the entire earth—including, in particular, matters relating to the heavens, the sun and moon, and the other planets and stars, their movements and their courses, as well as the four elements and their differences, and the world with its divers kingdoms and countries, and its principal cities. Treating, furthermore, of the sea and of navigation, with certain



HANS NANSEN

serviceable directions thereto appertaining. Collected from various books, and transcribed by Hans Nansen. Printed in Kiöbenhaffn (Copenhagen), by Andrea Koch, 1633, at the expense of Peder Andersen, bookseller, and sold by him.' Here are astronomy and physics, geography and chronology, directions for taking the altitude, tables of exchange, tide-

tables, the declination of the sun and stars, etc. Some of the information is certainly rather surprising to the modern reader, who is no longer satisfied with the theory that 'thunder has its source and origin in a sulphurous humour in the earth, which, being drawn upwards by the sun into mid air, becomes mixed with watery vapours and clouds, and then, by perpetual movement, and by the action of the sun's rays, at last becomes heated, whereupon a terrific strife ensues between the hot vapours and the cold; and since the dense chill clouds afford no outlet for this energy, it violently bursts its way through them, with the noise and reverberation which we call thunder.'

It is also impressive to learn, under 'Chronology,' that on Good Friday, 1276, a Dutchwoman, in her forty-second year, gave birth to 346 children, 'half of them boys, and half of them girls, who all lived long enough to be baptised. The boys were called John and the girls Elizabeth. All died immediately after baptism.'

These and other marvels, however, belonged to the age. What particularly interests us is to hear what he thought of the northernmost regions, 'Borealia.'

'Borealia,' he says, 'is the common name of all the countries lying northward of Europe, Asia and America, right up to the North Pole, some of which are little known to us, and some not at all, on account of the intense cold and ice which reign there. The most famous among these countries are Greenland, Grenland, Bear Island, Jan Mayen Island, Nova Zembla and Friszland, all of which are cold and barren lands, whereof little need be said.

'Greenland is a country of very great extent, belonging to the Kingdom of Norway. Its coasts were explored in former years by the Norwegians, and were settled by them,

two Bishoprics being there established. But it is now many years since Greenland proper has been visited, and, although it lies not far north-west of Iceland, it has become so entirely unknown to us that we are uncertain whether the Christian religion is still practised there.

'Grenland lies N.N.E. of the North Cape, and is believed by some to join on to Greenland. It was discovered by the English, and is visited every year by a number of English, Danish and Dutch ships, for the sole purpose of catching whales, which they boil down for train-oil. This is the northernmost land now known, viz.: over 80° north latitude, and is called by the Dutch Spitz Bergen.

'Bear Island lies about midway between the North Cape and Grenland, and is only a small island, where the whale and the walrus are found.

'Friszland lies a little south-west of Iceland, and is not now visited.

'Nova Zembla (that is to say, New Land) lies directly opposite the Samoyedes, which belong to Russia; between them is Veigabit. This region was first discovered by the Russians, and being quite barren, is now abandoned.'

The 'Compendium Cosmographicum' became a popular handbook, so much read by seafaring men and others, that four editions were exhausted in the author's lifetime. Indeed, we gather that up to a few years ago it had not quite gone out of use. The copy now in the possession of the Nansen family came, according to a well-authenticated tradition, direct from a skipper who sailed by it. Inside the old cover, the late owner of the book has inscribed the following testimonial:

'*This book is of great use to seafaring folk. Ole Börgersen Aas*, 1841.'

Thus the handbook of the gallant old Arctic skipper may be said to have done service down to the very threshold of the time when his descendant was preparing to add new 'courses' to those he had so diligently laid down—'courses' across Greenland and to the North Pole.

At the age of forty, Hans Nansen begins to rise in the world; and soon he exchanges the command of a ship's crew for that of the burgesses of Copenhagen. He first became town councillor, then one of the four burgomasters, and in 1654 he held the chief place among the four. Shrewd, ready-witted, eloquent, accustomed to command, and endowed with a firm will and invincible energy, he seemed specially created to take part, and a leading part, in the critical times which followed.

In 1658 the Swedish king, Karl Gustav, declared war and invaded Zealand. The Estates met at the Palace, the royal message was read, and the king addressed them in person. It fell to the lot of Hans Nansen to answer that the burghers 'would stand by the king through thick and thin,' and the populace behind him shouted their assent. Not only was the integrity of their native land at stake, but civic freedom and independence as well. On the following day, the 10th of August 1658, the Privy Council was obliged to issue a proclamation 'which was as good as a patent of nobility to all the merchants and handicraftsmen of Copenhagen.' Karl Gustav understood its significance. 'Since the burghers have obtained such privileges,' he exclaimed, 'no doubt they'll stand a tussle.' And during this 'tussle' the leading Burgomaster of Copenhagen had no peace either by day or night. Earthworks had to be constructed, ditches filled, provisions laid in, soldiers quartered,

the burghers drilled and commanded, and public order preserved in the midst of a concourse of people crowding into the city from every side. 'We find him now at home, opening his plate chest and his money-box, placing great sums at the king's disposal, lending him his carriage and horses, and all the time doing his best to keep up the spirits of his own family; now in the Town Hall sitting in council or on the bench; now in the Chamber, now with the king; then again at a regimental inspection, or on the fire-watch tower, or at the outworks, with the bullets picking men off on every side; now listening to the sermons which were preached on the ramparts, now going the rounds with the night patrol.'[1] And when it comes to meeting the enemy outside the fortifications, the indefatigable Burgomaster is still in the van.

This leader of his fellow-townsmen and champion of their privileges shows the same promptitude and presence of mind in the days of the revolution which makes of Denmark an hereditary kingdom. As we see him meeting Otto Krag's threat of imprisonment, by pointing to the alarm-bell in the tower of Our Lady's Church, we read in his face an indomitable strength of will and tenacity of purpose which cannot but remind us of the subject of these pages. Where these qualities re-appeared in the intervening family history, and where they lay dormant, we have not sufficient data to determine. But it is certain that there are remarkable points of similarity between the old Burgomaster and his grandson's grandson's grandson.

It would seem as though Fridtiof Nansen himself were conscious of this hereditary strain in his character. In one of his letters to his father, he speaks of the Nansen

[1] Fr. Hammerich, in *Historisk Tidsskrift*. 3rd series, i. p. 204.

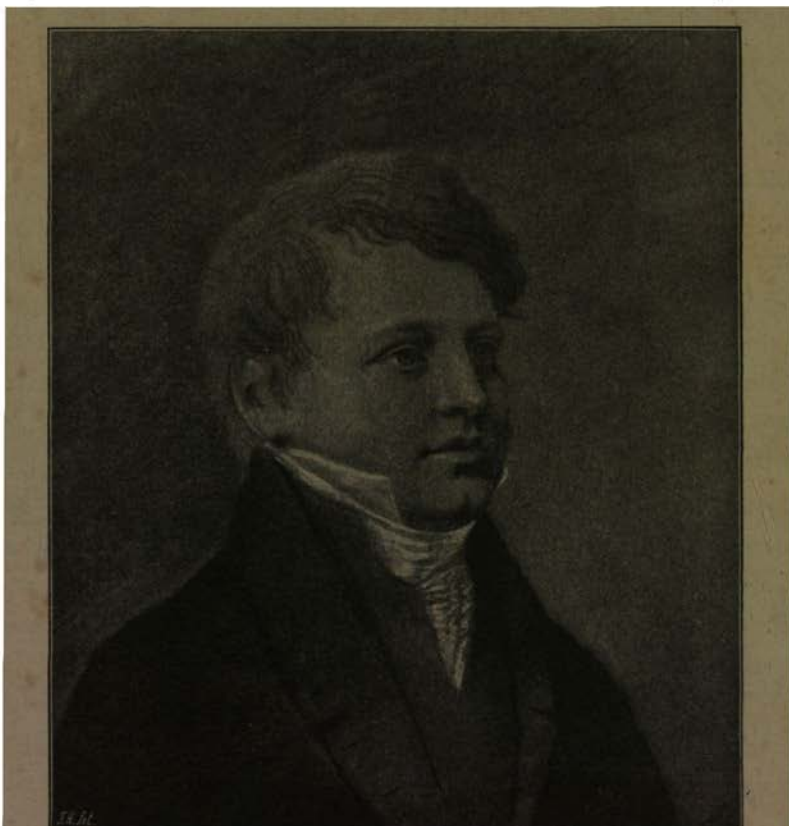
pride, which in his case, when occasion demands, takes the form of an adamantine stubbornness.

But this pride does not descend to him on the male side alone; through his mother he inherits the blood of the Wedels. Gustav Wilhelm von Wedel, a scion of this originally German stock, came to Denmark during the Scanian war as commander of a strong auxiliary force, which the Prince-Bishop of Münster placed at the disposal of Christian V. He swore fealty to the Danish king, and was appointed 'lieutenant-marshal.' In 1683 he bought from U. F. Gyldenlöve the former barony of Griffenfeld near Tönsberg in Norway, including an old royal residence at Sem, now called Jarlsberg. At the New Year (1684), Lieut.-Marshal von Wedel received the title of Count Jarlsberg, and was subsequently appointed commander-in-chief of the army in Norway.[1] He superintended the reconstruction of the fortress of Akershus (near Christiania), and took a leading part in the fortification of the frontier from Frederiksten to Kristiansfjeld. This energetic and God-fearing man died in 1717. His father and grandfather had been officers in the service of the Duke of Pomerania. In the Thirty Years' War, too, his father had commanded a regiment of cavalry under the Swedish General Baner, and earned the nickname of 'Dare-devil.'

The barony of Jarlsberg was inherited by the grandson of the first count, who went in quest of military adventure to Italy and Spain, and had an arm disabled during a Spanish invasion of Morocco. His great-grandson was Count Herman Wedel-Jarlsberg, the famous political leader of 1814, afterwards Viceroy (Statholder) of Norway.

[1] Which, at that time, and for more than a century afterwards, belonged to the Danish crown.

Count Herman had a younger brother, Baron Christian Frederik Vilhelm of Fornebo, whose daughter was the mother of Fridtiof Nansen. Thus, if pride and spirit of adventure may be said to lie at the root of the father's family-tree,



BARON CHRISTIAN F. V. WEDEL-JARLSBERG (NANSEN'S GRANDFATHER)

every branch of the mother's bears evidence of the same qualities.

A few words more about the Nansen family. Hans Nansen, Municipal President, Privy Councillor, and Judge of the Supreme Court, died at Copenhagen, November 12, 1667. A daughter of his eldest son, Michael Nansen, was

married to the celebrated Peter Griffenfeld. A younger son, Hans Nansen, was Municipal President of Copenhagen at the time of his death in 1718. His grandson was Ancher Anthony Nansen, with whom the male line removed to Norway. In 1761 he became district magistrate of Outer Sogn, and there married a lady of the name of Leierdahl, a member of the Geelmuyden family. His only son was called Hans Leierdahl Nansen. This name is not unknown in the political history of Norway; and although the points of resemblance between his character and his grandson's are few and not easy to specify, we must nevertheless give some account of him.

He was only a year old when his father died, and he passed more than thirty years in Denmark—the years of his education and of his early official career—before he returned to Norway. He himself has, with ample reason, described this period of his life as far from happy. He was divorced from his first wife, who died in 1862, as Abbess of the Convent of Estvadgaard in Denmark; and the divorce was by no means the only trouble that fell to his lot in these years.

It was in Denmark that he assumed the sonorous title of Provincial Judge, which he could never after be induced to drop, although he held other offices of very different and more extensive jurisdiction.

On his return to Norway he became, in September 1809, district-magistrate of Guldal, in the province of Trondhiem, a post which he filled for three years and a half, earning the reputation of a zealous magistrate and an agreeable member of society. He was a leading spirit in the Trondhiem Dramatic Club, and a fertile 'occasional' poet. He himself has called these his happiest days, and when he was offered

promotion to another district, he hesitated whether to accept it.

It was at this time, too, that he entered political life.



BARONESS C. F. V. WEDEL-JARLSBERG (NANSEN'S GRANDMOTHER)

When hostilities with Sweden broke out in 1813, he composed a war song for the soldiers of Trondhiem:

'Alt Stridshornet frygtelig lyder.
At drage fra elskede Hjem
Ind-, Ud- og Optrønder det byder
og ile til Ledingsfærd frem.'[1]

[1] 'Already the war-horn rings forth terribly. It summons the men of Inner, Outer, and Upper Trondhiem to quit their beloved homes, and dash forward to battle.'

The song is an average specimen of the martial rhyming of the period. Its author felt, in common with most of the people of Trondhiem, that the issue at stake was whether their province should pass under Swedish rule or remain Norwegian. Therefore it is that his muse speaks in terms of provincial no less than of national enthusiasm :

'. . . blandt Fiendens tætteste Haabe
frem, Trønder ! hinanden tilraabe.
Og Dynger af faldne og Strømme af Blod
skal vidne, at seirende Trønder der stod.' [1]

It was this enthusiasm for the unity of Norway which inspired Nansen's political action when, on the conclusion of the Peace of Kiel, the Viceroy, Prince Kristian Frederik, undertook his famous winter journey to Trondhiem.

Nansen's name is not appended to the address with which the people of the province prepared to greet the prince, setting forth the popular desire for constitutional government. This is not, as might be supposed, a mere chance. Nansen did not believe that the time had come for this move ; he thought the first point was to secure beyond all question the independent existence and integrity of Norway.

In his festival poems, however, Nansen did fervent homage both to his country and to the prince.

These poems of Nansen's give true expression to the feeling then prevalent in the north of Norway, the key-note of which was fear for the dismemberment of 'gamle Norge' and her absorption into Sweden.

In March 1814, Nansen left Trondhiem for the district known as Jæderen, situated in the extreme south-west of Norway, between Stavanger and Egersund.

[1] 'Into the densest masses of the enemy, press forward, men of Trondhiem; and let your war-cry pass from mouth to mouth. Then heaps of slain and rivers of blood shall bear witness that there the sons of Trondhiem stood victorious.'

In his new sphere of activity he found the popular sentiment radically different from that which prevailed in the north. Here the pressure exercised by the war with England upon all the conditions of life produced another shade of provincial feeling. But there was no more inclination here than in the north to renounce one jot or tittle of Norway's rights.

When Nansen, as representative of the Stavanger district, took his place in the first Provisional Storthing, the brief war, and the way in which it appeared to have been conducted, had impressed upon him the conviction that Norway ought to enter into an alliance with Sweden. But the terms of this alliance must be as honourable to Norway as language could make them. It should unmistakably bear the stamp of a voluntary arrangement, and in every department in which amalgamation was not unavoidably necessary, the freedom and independence of Norway should be set forth in clear and unequivocal terms. No clause should be allowed to figure in the Norwegian Constitution which could give the Swedes the slightest semblance of supremacy.

By not a few of his contemporaries, Nansen was regarded as an empty windbag; and this unflattering opinion was probably not quite without foundation. He was unconscionably loquacious; so much so that he and his colleague Justice Koren were likened to buckets in a well, for no sooner did one of them subside after speechifying than the other popped up in his stead. And the fact that he was decidedly lacking in the graces of oratory made Nansen appear all the more irrepressible.

However, he was a man of real ability and a fervent patriot. It ought not to be forgotten that it was he who, on August 2, 1815, moved and carried the proposition that

the Storthing should appoint a committee for the revision of the ministers' portfolios, an important advance towards establishing the constitutional responsibility of the Cabinet. 'Both in the newspapers and among the public,' says the historian, Yngvar Nielsen, 'there was much rejoicing over the Storthing's decision. People felt that now they had broken away completely from the trammels of the past, and that they had learnt what constitutional government really meant.'[1] In 1818 Nansen returned to private life, but in 1821 he again sat in the Storthing.

With all recognition for the courage and lyric fervour of his character, it must be frankly confessed that his tongue was an unruly member, and that he was reckless both in speech and in writing. Few men in our public life have been so ready to cast grave aspersions on their opponents. At the same time these charges were no doubt based on honest conviction, arrived at a little too easily.

Towards V. F. K. Christie he was bitterly hostile, denouncing him as a henchman of the Swedish and reactionary party.[2] When Christie in 1815 tried to carry by a rush, as it were, a motion for removing to Bergen the headquarters of the Norwegian Bank, Nansen thwarted his design with admirable promptitude of resource. It is this episode which is still daily recalled in the common

[1] *Norges Historie efter 1814.*

[2] The Provisional Storthing of 1814 presented Christie with a gold loving-cup, in recognition of the ability and patriotism with which he had conducted the momentous negotiations with Sweden. In 1815, when the Opposition no longer thought Christie 'stalwart' enough, Nansen gave expression in the following epigram to the gathering ill-will towards the red-haired President, who went by the nickname of Fuchs (Fox):

Fuchs got a golden cup
When Freedom first drew breath;
With wine he filled it up,
And drank the bantling's death.

saying: '"Egersund is a pretty little town, and that's where *I* live," said Judge Nansen.'

At the close of a prolonged sitting of the Storthing, on May 1, 1821, Nansen was seized with a paralytic stroke, and died on the fifteenth of the same month, at midday. His funeral took place on May 21. Dean Sigwardt, speaking at the grave, said: 'Whatever was his inmost conviction, that he spoke out frankly, and he proved himself in word and deed faithful to king and country, and an upright, just, impartial friend to truth and righteousness.'

Those who accompanied him to his last resting-place sang at parting:

'Hjertets Adel, Venskabs Underpant,
maatte Venners Hjerte til dig drage;
thi med Snillet Fromhed du forbandt,
givet Haandslag aldrig tog tilbage.'[1]

Judge Nansen married a second time in 1810, the lady being Vendelia Christina Louisa, daughter of Court-Printer Möller, of Copenhagen. An intimate friend of the family says in a letter to the present writers: 'Mrs. Nansen was a woman of uncommon ability, highly educated, remarkably well versed in languages, possessed of strong literary tastes, and of no small capacity as a writer. Especially in her younger days, she was witty, quick at repartee, and excellent company. Many apt sayings of hers, as well as of her husband's, were in circulation. Her charming and hospitable house was a social centre in Christiania from 1845 to 1868, the meeting-place of a large circle, principally composed of well-known and respected official families. Several times, on the occasion of Mrs.

[1] 'The nobility of thy heart, friendship's pledge, could not but draw thy friends' hearts to thee; for thou didst combine piety with ability, and didst never draw back a hand once outstretched.'

Nansen's birthday (May 2nd), private theatricals were given, the prime mover in which was Miss Augusta Hagerup, the sister of one leading statesman and aunt of another, and a niece of Henrik Steffens.' We may possibly trace in Fridtiof Nansen, under different forms, certain characteristics of his grandfather and grandmother. He too can be reckless, albeit in an absolutely different fashion; he too has a strong poetic tendency, though it seeks absolutely different modes of expression. And although his love of action and his scientific talent are his salient characteristics in the public eye, he has also, as we shall see in due time, a strong taste for literature and art, combined with marked ability as a popular author.

But whatever uncertainty there may be as to the inherited elements in his character, there can be no doubt as to the influence exercised upon him by the home of his childhood.

CHAPTER II

CHILDHOOD

NANSEN himself says in one of his letters (March 30, 1885): 'Is it not really wonderful? If any one may be excused for believing in his lucky star, it is surely I—so often have extraordinary chances happened, just at the crucial moments of my life, which seemed to point the way for me.' The truth of this utterance will amply appear in the following pages; but even at this point we need not hesitate to affirm that his lucky star was in the ascendant from his cradle upwards; gave him just the home he needed, and precisely the natural environment which, without any foresight on his part, disciplined and prepared him for long journeys and lofty goals.

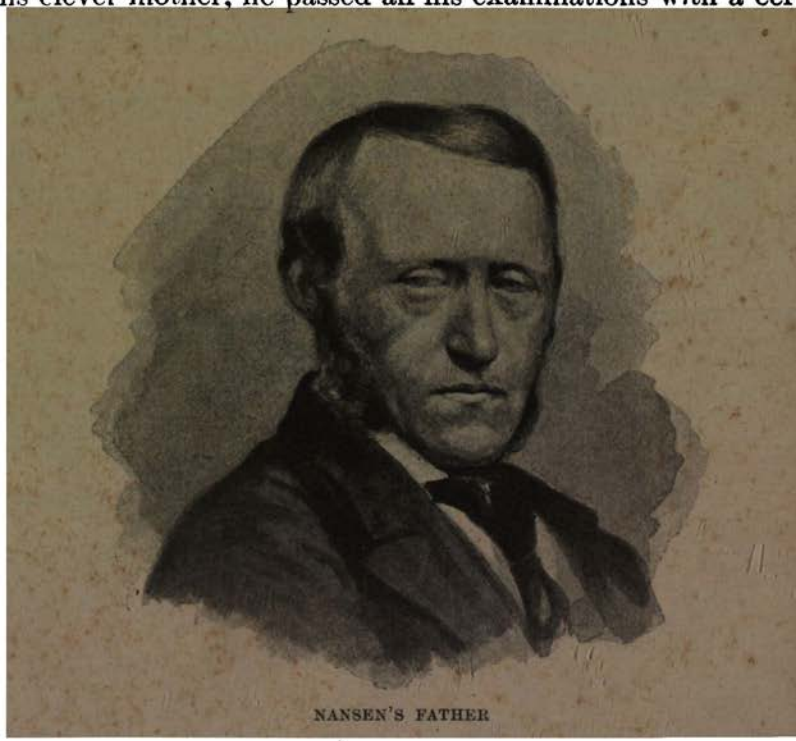


FRIDTIOF NANSEN AND HIS FATHER

Fridtiof's father, Baldur Fridtiof Nansen, was born in Egersund in 1817. After the death of his father in the twenties, Baldur Nansen's mother removed from Egersund to Stavanger, for the sake

of her son's education. Here she lived till 1835, when he matriculated at the University of Christiania.

'He was industrious,' says that friend of the family whom we have just quoted, 'well-behaved and exemplary in every respect. His abilities were not brilliant, but, being strictly and plainly brought up, and stimulated by the influence of his clever mother, he passed all his examinations with a cer-



NANSEN'S FATHER

tain distinction, and became an accomplished jurist. He had none of his parents' wit and fancy; but he was noted for his thoroughly refined, amiable and courteous manners and disposition.'

He became Reporter to the Supreme Court; but he was principally employed in finance and conveyancing. He enjoyed unbounded confidence.

Those who have only known by sight the slightly built little man, so precise in all his ways, a gentleman of the old school, and one to whom the pleasures of sport were entirely foreign, may be inclined to think that there could scarcely be a sharper contrast, mental and physical, than that between the father and the son. But a closer examination will reveal a point of resemblance. Fridtiof Nansen's designs are brilliant; but he would never have been able to carry them out had he not from early childhood trained and developed his powers to the uttermost. This is apparent in his sporting exploits, no less than in his scientific studies. A Peer Gynt can conceive the plan of flooding the Sahara with the waters of the Atlantic,[1] but the man who is to *do* it is not content with the luminous idea of his fertile brain. And it is just this immutable steadfastness to his own ideals, this passionate, and at the same time conscientious absorption in all the details of his work, whether in the way of physical training or mental development, that is so characteristic of Fridtiof Nansen. This gift of thoroughness he doubtless owes to his father.

The elder Nansen possessed another quality which comes out strongly in his private correspondence. He was a father in the most emphatic sense of the word. He could be strict, because he instinctively applied to the bringing up of his children the principles which had governed his own. He could wield the cane in the good old style; but he had a fine and sensitive nature, and was full of watchful care for his child's future. He never made his will an obstacle in the way of the boy's development. He was always inclined (for this we have much documentary evidence) to waive his own views for the sake of his son's

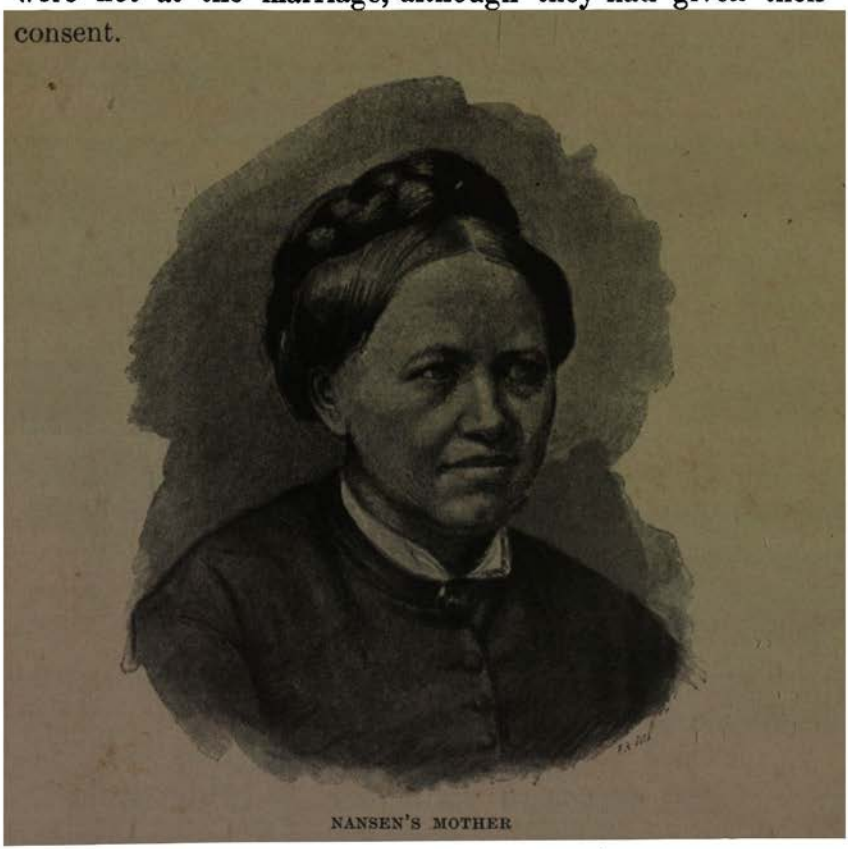
[1] Ibsen, *Peer Gynt*. Act IV. sc. 5.

advancement. We will quote here a few lines which indicate his feeling for his son. They form the beginning of a letter written on September 4, 1882, shortly after Fridtiof Nansen had become Curator of the Bergen Museum, and a month after his return home from his first Arctic voyage with the sealer *Viking*.

'Dear Fridtiof,—I write these lines to let you know something that you certainly have no suspicion of. I am longing for you intensely, and I miss you more and more every day. When you were away for five months on your Arctic adventures, of course I missed you too. But I was always looking forward to our meeting, thinking, "The time will soon pass, Our Saviour will graciously preserve him on his way, and when I do get him back again, no doubt I shall be able to keep him with me all the longer." Then, too, the happy confidence that the journey would be particularly advantageous to your future kept up my spirits. But all that is changed. Our paths are now almost completely sundered, so far as this world goes. The days will seem terribly empty for the old man. But I must console myself exactly as I did during the Arctic voyage. People who understand these things all declare that this post will be of immense service in advancing you in the world, and will enormously facilitate your studies. . . .'

Baldur Nansen's first wife was the daughter of Major-General Sörensen, and sister to the wife of the poet Jörgen Moe. His second wife (Fridtiof's mother) was Adelaide Johanna Isidora, *née* Wedel-Jarlsberg, who also had been married before. Mrs. Adelaide Nansen is described as a tall and stately lady, capable and resolute, even-tempered and straightforward, without any pretension on the score of birth and ancestry. She had a masculine will. It was

greatly against the wishes of her strict and aristocratic father that she married a baker's son for her first husband. However, she carried her point, and her mother appears to have sided with her in this affair of the heart. The parents were not at the marriage, although they had given their consent.



NANSEN'S MOTHER

As a young girl she had defied opinion and cultivated that sport which her son was afterwards to render world-famous. She was devoted to snow-shoeing, which was at that time thought unwomanly and even improper. As a housewife, she was one of those who know every nook and corner of the house from attic to cellar—active, managing,

ready with her hands and not afraid of the coarsest work. If the servant had blistered her fingers, the lady of the house would herself take hold and wring out the wet linen. She worked in the garden, and she made her boys' clothes. They had no other tailor until they were eighteen years old. Nevertheless, she found time to acquire the knowledge she had not stored up in early youth. Her will power and love of activity, her intrepidity, her practical and resolute nature, have descended to her son.

Mr. and Mrs. Nansen, after their marriage, settled down upon a small property belonging to her at Great Frœen, in West Aker. Here Fridtiof was born on October 10, 1861.

In the choice of his birthplace, his lucky star, as we have said before, had ordered things for the best. Here was country life, here were cows and horses, geese and hens, hills for snow-shoeing on every side, great forests close at hand, and, only some two miles and a half away, an excellent school, one of the best in Christiania. These two miles and a half were reckoned a mere nothing in the Nansen household. First to school in the morning, and back again, then, on summer afternoons, down to the fortress to learn to swim—that makes a good ten miles of a hot summer's day, to say nothing of minor wanderings. And there were invariably fights by the way—systematic training, be it observed, from the very first.

Frœen farmyard was the scene of the boy's earliest expeditions, and it was not Arctic cold, but torrid heat that first imperilled his life. One day when he was three years old, and still in frocks, he stood hammering away at a wheelbarrow, no doubt trying to mend it, when, to the consternation of those in the kitchen, a column of smoke was seen

to be rising from his person. 'He's on fire!' was the cry. Out rushed the housekeeper, and tore his clothes off his back. In the course of his wanderings, he had visited the brew-house, where some sparks from the fire had lodged in his petticoats; and behold! he was within an ace of



GREAT FRÖEN—THE DWELLING-HOUSE

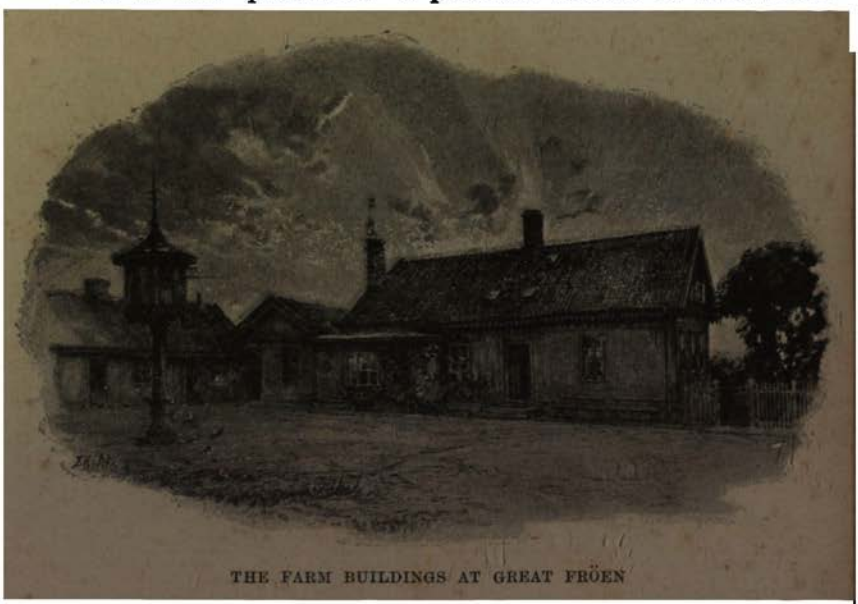
being burnt to death in blissful unconsciousness that anything was amiss.

The Frogner river flowed right past the front door at Fröen, and here Fridtiof and his younger brother would bathe in the fresh of the evening, in the coldest pool they could find. Indeed, the younger of the two would sometimes nearly perish with the cold, so that after

coming out of the water he had to be dragged about at a brisk trot, in the costume which preceded all fashions and modes of dress, in order to keep life and warmth in his body.

Into this same river they fell through the ice in the winter, and when their mother appeared on the scene she would find Fridtiof in the act of fishing his brother out. And it was in the Frogner river that Fridtiof himself came near to losing his life.

But it also presented a peaceful means of livelihood.



THE FARM BUILDINGS AT GREAT FRÖEN

They selected from among the pea-sticks those made of juniper, rolled their trousers well up, and went digging among the decayed leaves in the garden for bait, which they stored in the turned-up portion of their breeches. Then they went and fished for trout or minnows. Now and then the hook would go astray and stick fast in Fridtiof's under lip; whereupon Mrs. Nansen would have recourse to father's razor, make a resolute incision and extract

the foreign body. No fuss or pother on either side. Not so much as a sound.

Here at Frœen he first ran his head against the ice —the rough ice in the yard. When the little five-year-old rushed into the kitchen, there was scarcely a white spot left on his face, for the blood that trickled down it. He would not shed a tear, and was only afraid of being scolded. But from that day to this he wears his first ice-medal in the shape of a scar.



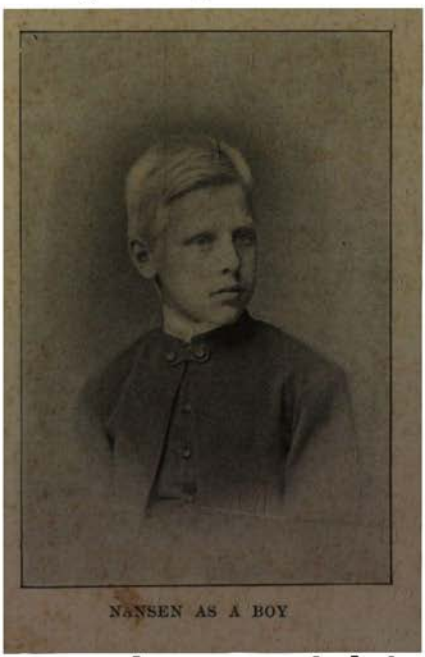
NANSEN AS A CHILD

There was a great leaf-plant down in the garden, from the fronds of which the boys contrived to make weapons of offence, filling them with little stones and gravel, and then slinging them in each other's faces, where they burst like shells. They made spears of pea-sticks, and were great in shields and wooden swords, as well as darts feathered with paper.

They hunted squirrels with dog and bow. 'Storm,' the dog, would chase the squirrels up trees, where the little creatures found a tolerably secure asylum; for the arrows never hit them. Finally, Fridtiof, inspired by Indian tales, hit upon a devilish device which he thought must prove fatal. He anointed the arrow-head with the juice of a poisonous mushroom, so that a wound from it meant certain death. But the arrows somehow did no more execution, although he also tipped them with melted lead to make them carry better.

After that he took to a new variety of weapon—cannons. He stuffed them to the muzzle with powder, but could not get it to ignite. Then he made a maroon, and poked it about so much that it exploded in his face. The cannon ultimately burst; and it was again his mother's task to take him aside and pick out the powder grain by grain.

He himself tells the story of his first snow-shoes, and his first great leap:



NANSEN AS A BOY

'I am not speaking of the very first pair of all—they were precious poor ones, cut down from cast-off snow-shoes which had belonged to my brothers and sisters. They were not even of the same length. But Mr. Fabritius, the printer, took pity upon me; "I'll give you a pair of snow-shoes," he said. Then spring came and then summer, and with the best will in the world one couldn't go snow-shoeing. But Fabritius's promise sang in my ears, and no sooner had the autumn come and the fields begun to whiten with hoar-frost of a morning, than I placed myself right in his way where I knew he would come driving by.

'"I say! What about those snow-shoes?"

'"You shall have them right enough," he said, and laughed. But I returned to the charge day after day: "What about those snow-shoes?"

'Then came winter. I can still see my sister standing in the middle of the room with a long, long parcel which she said was for me. I thought she said, too, it was from Paris. But that was a mistake, for it was the snow-shoes from Fabritius—a pair of red-lacquered ash snow-shoes with black stripes. And there was a long staff too, with shining blue-lacquered shaft and knob. I used these snow-shoes for ten years. It was on them I made my first big jump on Huseby Hill, where at that time the great snow-shoe races were held. We boys were not allowed to go there. We might range all the other hills round about, but the Huseby Hill was forbidden. But we could see it from Frŏen, and it lured us day after day till we couldn't resist it any longer. At first I started from the middle of the hill, like most of the other boys, and all went well. But presently I saw there were one or two who started from the top; so of course I had to try it. Off I set, came at frantic speed to the jump, sailed for what seemed a long time in space, and ran my snow-shoes deep into a snow-drift. We didn't have our shoes fastened on in those days, so they remained sticking in the drift, while I, head first, described a fine arc in the air. I had such way on, too, that when I came down again I bored into the snow up to my waist. There was a moment's hush on the hill. The boys thought I had broken my neck. But as soon as they saw there was life in me, and that I was beginning to scramble out, a shout of mocking laughter went up; an endless roar of derision over the entire hill from top to bottom.

'After that, I took part in the Huseby Hill races and won a prize. But I didn't take it home; for I was put to shame on that occasion as well. It was the first time I had

seen the Telemark peasants snow-shoeing, and I recognised at a glance that I wasn't to be mentioned in the same breath with them. They used no staff; they simply went ahead and made the leap without trusting to anything but the strength of their muscles and the firm, lithe carriage of their bodies. I saw that this was the only proper way. Until I had mastered it, I wouldn't have any prize.'

A certain direct way of looking at things was characteristic of Fridtiof Nansen from his earliest childhood. He never insisted on trifles—never sulked or bore ill-will. What was past was past—blown to the winds. In this connection it is interesting to read what the faithful friend of his childhood relates of the origin of their friendship.

Fridtiof was already quite at home at the school when Karl, his future comrade, arrived. They were both in the second form in the lower school. Fridtiof was the strongest of the boys, and lorded it over them all; but Karl was strong as well. They eyed each other askance, these two, and each kept to his own domain. One day, however, during the recess, Karl began throwing a ball at the other boys, each in turn. 'You mustn't do that,' said Fridtiof peremptorily. 'Oh, mayn't I?' returned the other, aimed at Fridtiof, and hit him.

A battle royal ensued; the fur flew and the blood spurted, until Aars, the head master, arrived on the scene, seized the two small fighting-cocks by the wings and put them in the empty class-room. 'Now just sit there, you two,' he said, 'and look at each other, and be ashamed of yourselves.'

It was a hazardous experiment—but it succeeded. They did look at each other; the second part of the master's injunction they neglected, but they began to talk.

By the time Aars came back, they were sitting with their arms round each other's shoulders, reading out of the same book. From that day forward they were inseparable.

There was always war with the Balkeby[1] boys when the two Nansen brothers were on their way home from school. Fridtiof, indeed, was peaceably disposed and never precipitate; but when the moment came, he went in with a thorough contempt for consequences. The youth of Balkeby was not very particular in its choice of weapons. One of the brothers was once hit on the back of the head with a stone fastened to a leather strap. When Fridtiof saw the blood he was furious, set upon them, and put the whole band to rout.

Even in early childhood his thoughts were more to him than his dinner; and when he was absorbed in anything he was oblivious to his surroundings. One day when the family were all at table, one of the children cried out, 'Why, Fridtiof, that egg of yours is all green!' And so it was; but he was quite unconscious of the fact.

His upbringing was Spartan. The children were made to take turns in waiting at table. Even when they were quite big boys, their monthly allowance of pocket money did not exceed sixpence apiece, and of that they had to render a strict account. But these Spartan measures struck a responsive chord in Fridtiof's own character. He was not more than seven or eight when he and his brother were for the first time allowed to go to the fair by themselves.

In those days Christiania Fair still presented a variety

[1] A suburb through which the boys had to pass.

of attractions to the unsophisticated. There were jugglers' booths and clowns, not to speak of toys, and whole stacks of gingerbread cakes. The fair was the children's promised land, and one of the greatest festivals in the year. Once, when a Christiania clergyman asked a candidate for confirmation what were the feast days of the ecclesiastical year, the boy could think of none but Christmas and 'Fair-day.'

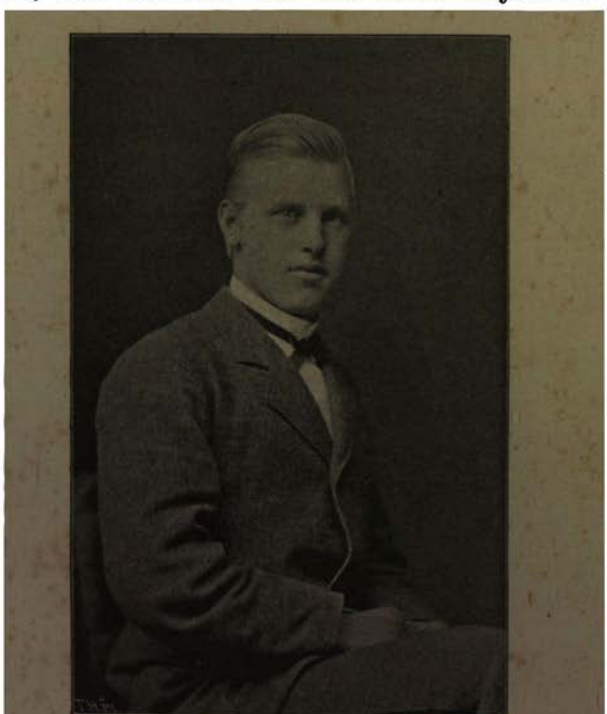
On this occasion, Fridtiof and his brother were comparatively generously supplied with funds; they had received sixpence each from father and mother, a shilling from grandmother, and one from aunt. But all the fun of the fair, the theatres, the toy booths and the mountains of gingerbread, they passed by with ascetic resolution.

On their return home it was found that they had laid out all their money in tools. This made such an impression that each of the home authorities came down with a fresh grant to the original amount. Back they trudged all the way to Young's Market Place in order to supplement the outfit of tools. When, on their way home, they passed the baker's at Hegdehaugen, they had only twopence left, and this was invested in coarse rye cakes. It must be admitted that no Christiania boy, at fair-time, has ever come nearer the Spartan ideal.

He was a terrible one for falling into brown studies. Between putting on the first and the second stocking of a morning, there was always a prolonged interval. Then his brothers and sisters would call out, 'There's the duffer at it again! You'll never come to any good, you're such a dawdler.'

He was always bent on getting to the bottom of everything. He asked so many questions, says one of his older friends, that it made one absolutely ill. 'Many a time have

I given him a thundering scolding for this everlasting "Why? —Why?—Why?"' The arrival of a sewing machine at Frœen naturally aroused the demon of curiosity in all his virulence. He must find out what kind of animal this was. So he took it all to pieces, and when his mother came back from town, the machine was the most disjointed puzzle



NANSEN AS A YOUTH

imaginable. If tradition is to be trusted, however, he did not give in until he had put it all together again.

As a schoolboy, Fridtiof Nansen was industrious, and passed out of the intermediate school in 1877 with distinction. In the upper school, it is possible that sport and a thousand and one private preoccupations absorbed too much of his time. In any case, we find a heartfelt sigh going

up from the half-yearly report of his masters, Aars and Voss, in 1879: 'He is unstable, and in several subjects his progress is not nearly so satisfactory as might have been expected.' It is true that their expectations were probably rather high in the case of a boy who astonished his teacher of mathematics by giving a geometrical solution of a problem in arithmetic.

The fact was that Fridtiof Nansen had many other problems to solve besides those set him at school. The questioning spirit of early childhood grew apace in this period of active development, and took decided and ever new forms. There was scarcely a thing in heaven or earth that he did not probe into. And as soon as he had got to the bottom of it, he whistled all thought of it to the winds and attacked a fresh problem.

In the natural sciences, which were his favourite study, he had of course to experiment. When they were about fourteen or fifteen, he and his young companion, who after that first 'explosion' had become his intimate friend, had somehow got hold of a box of pyrotechnic materials and a mortar, the latter lent to them on condition that they should be exceedingly careful with it. By way of carrying out this injunction, they one evening filled it full of a great variety of fluid substances, the properties of which they had yet to ascertain by experiment. A spark fell into the mixture, and the flames rose to the ceiling of the little attic room in the wooden villa where Karl lived. The youthful investigators took resolute hold of the mortar and tipped it out of the window, smashing it into a hundred pieces. Thus they fulfilled to the letter the recommendation of extreme care. While the sulphur was still running down the outer wall, where it left a mark for many a year as a memento of the

adventure, the boys threw themselves down flat on the floor and blackened their faces, so that Fridtiof's brother Alexander, on coming in, should think they had been killed by the explosion.

Like all half-grown boys, Fridtiof had his tender, inflammable moods, and many a moonlit evening has he wandered outside the windows of the chosen one of the moment. But it probably never got as far as a declaration. Indeed there would have been difficulties in the way, for he and Karl often had the same flame, and sighed in the same moonbeams before the same window. Besides, he was as bashful as he was vulnerable. On the other hand, we have historical testimony to his chivalry.

One night—he was then about fourteen—he and his brother were coming from a children's ball down in the town. In the suburb of Homansby they passed a lady and her maid. A little farther up the street three 'gentlemen' were standing. Just as the boys passed, they heard one of the men exclaim, 'That's the girl for me!' and all three made towards the two women. 'We must stand by them!' said Fridtiof; and the two boys set upon the three grown men and made a fight of it. Fridtiof got one of the roughs up against a fence, planted one fist in the breast of his antagonist, and with the other hand tore open his own overcoat. 'Don't you know who I am?' he cried, and pointed to the cotillion favours sparkling in the moonlight. The ruse succeeded. The two boys were left in possession of the field, and the damsels in distress were rescued. But truth before everything: the lady's name was not Eva, *née* Sars, now Mrs. Nansen, and the brother did not marry the maid. This is what happens in novels, but not in Homansby.

Fridtiof Nansen sent his first drawings to Copenhagen when he was three years old. They have probably not been preserved. But his first attempt at literary composition is extant, in the shape of a letter to his parents who were travelling abroad in 1870. His independence of spirit shows itself here particularly in the spelling, in which, for that matter, his achievements were apt to be original and surprising for many years to come. 'I should very much like to have some postage-stamps from Rome, some unused ones; oh! never mind either, it doesn't matter whether they are used or not; but I would *rather* have unused ones, because of course I should get more for them if I might sell them, but then you said I mustn't sell postage stamps but  paste them in a book. Now you needn't bother about that blot, for there's no word underneath it; the next word comes after it, just as if it weren't there.'

With a certain humour, he jests about the torture it has cost him to write his letter. It ends as follows: 'And now this story's over, and I shall have very little to tell in another letter, but now it's over for the present; for now I have nothing more to tell you, my dear father and mother. How have you got on during all the long journey you are taking, and how far have you got by this time?—for I don't remember where you are. To-day is Sunday, and do you know how long I have been at this letter? Ever since Thursday, and up to to-day Sunday, the 27th of March; and this letter is almost every word wrong, so please excuse it being so badly written and having so many blots, and this scrap belongs to the letter because I hadn't room.'

A picture which shows Fridtiof Nansen's childhood and 'Spartan' home life in a quite new and significant light, is

drawn by himself in a letter to his father, dated December 20, 1883.

'My dear old Father,—So the first Christmas is drawing near that I shall have spent away from home, that happy glorious Christmas-time which seemed to our childish minds the acme of all the joys of earth, and the model for all we could imagine of the beatitude of heaven. In the eyes of the youth the picture is still bathed in a rosy radiance, though its outlines may be slightly altered, perhaps more matured. . .

'My thoughts fly silently homewards on soft, melancholy wings, to greet all the bright and peaceful Christmas memories, bathed in that magic glamour which ever surrounds an unspeakably dear and happy home, where so many merry Christmas-tides have been celebrated.

'How peaceful and impressive it always was! How softly and silently, how pure and white, Christmas snowed itself in! The great soft flakes fluttered gently down, shedding a kind of seriousness over the childish soul, even while it leaped and bounded in irrepressible glee.

'At length the great day dawned—Christmas Eve. Now our impatience reached its height. We couldn't stay quietly in one place, or sit still on our chairs for a single moment. We had to be up and doing something to pass the time—to distract our thoughts. We would peep through every available keyhole, or sample the great bags of raisins, almonds and figs, before they were taken into the bedroom where the Christmas-tree was; or we would be off tobogganing; or if there was enough snow, we would go snow-shoeing till dark. Sometimes, by great good luck, it would happen that Einar or some one else had to make one last rush into town to do an errand or two before the candles were lighted; and

then what joy to sit behind in the sleigh while it sped into Christiania and back again over the smooth hard roads, the bells ringing merrily, while the stars sparkled in the dusky heavens!

'At last the great moment came—father went in to light up, our hearts leaping and thumping the while. Ida would sit in the armchair in the corner and guess what she would get from this person and from that; others smiled in advance over some surprise they knew all about already; and then all of a sudden the door would open and all the Christmas lights would be shining before our dazzled eyes. Ah, what a sight! We gasped with sheer joy, we were quite dumb and couldn't say a word for the first few minutes, only to break out presently into all the wilder transports.

'Indeed, indeed, I shall never forget those Christmas Eves as long as I live.'

This letter is a not unimportant document. It shows that child life at Great Frœn was no whit more Spartan than Fridtiof Nansen needed for the sake of his development and of his future. It is true he was kept under rigid discipline until he attained manhood, but no violence was ever done to the child in him, and the training which made him hardy in no sense involved the hardening of his finer qualities. Two quite different sides of his nature, the gentle, childlike disposition and the indomitable will, were allowed to grow freely from his earliest youth; and as time went on, they developed side by side into a personality curiously unlike that of so many famous discoverers and pioneers, whose nature has become so indurated and so callous that the whole man seems little more than a kind of locomotive, with just enough warmth in it to serve the mechanical purpose of propulsion.

CHAPTER III

NORDMARKEN [1]

If, weary of the soft grace of the Christiania Valley, one turns and gazes northward from the tower on Tryvand Height,[2] one is confronted, as far as eye can see, with blue-black forests—forests and nothing but forests, ridge behind ridge, on and on to the farthest verge of the horizon.

This is Nordmarken, an unbroken stretch of Norwegian woodland, many square miles in extent, a lonely world of narrow valleys, abrupt heights, secluded glassy lakes, and foaming rivers.

Into this solitude no murmur from the busy capital ever penetrates, not even the sound of a panting engine or the warning whistle of a steamboat cautiously threading the intricacies of the fjord in the dense sea-fog.

Nor does the dirty town-fog of Christiania extend so far as this. However thick and heavy it may lie over the town, it has to yield before the fresh, cold airs from this wintry-white wood-world, and breaks like a grimy sea against the lower slopes. The fog of Nordmarken—for it has a fog of its own—is pure and full of moisture. There is a heavy rainfall in the hills, and deep snowdrifts linger hidden among the pines, when the last patch of snow has vanished from the unwooded levels around.

[1] The description of Nordmarken is by Theodor Caspari.

[2] Close to Frogner Sæter, about six miles from Christiania.

At the entrance to Nordmarken, the sedate grey country roads all come to an abrupt end.

Multitudes of easy-going, irresponsible wood-paths rival each other in offering themselves as guides. As gaily as if it were a game, with doublings and turnings, up hill and down dale, the path sets off through the thick of the wood. But have a care! The fellow is not to be trusted. All of a sudden he will divide into two or three equally trustworthy or untrustworthy tracks, and leave you without the slightest indication of which way you should go. Or else the path narrows little by little, and sneaks on in the shape of a wretched cow track. Or he stops dead at a bog and won't stir a step further.

Nordmarken abounds in such surprises, and it would be no easy matter to find a guide capable of leading the way unerringly through the vast area of the forest labyrinth.

At the frontier of Nordmarken the comforts of civilisation instantaneously stop short. When you have said good-bye to the great hotels on the slopes of the Frogner Sæter, and plunged into these interminable forests, you may wander for days without coming across anything remotely resembling an hotel.

At longer or shorter intervals—seldom shorter, however, than four or five miles—little red-painted forest homesteads crop up beside the quiet lakes, which as yet have never heard the whistle of the steam-pipe.

If you have come upon the lake on the opposite side from such a homestead, and wish to escape the tramp round to it, your plan is to light a fire by way of signal for a boat.

Tramping and rowing are practically the only means of locomotion in this district; riding, indeed, is not impossible,

but as a horse prevents the traveller from availing himself of the lake ferries, it is of doubtful assistance.

In this very inaccessibility lies the secret of the attraction



NANSEN AS A STUDENT

exercised by Nordmarken. It may be expressed in the single word, forest-solitude.

Here, only a few miles from the restless bustle of the great city, one is suddenly set down, with no apparent

transition, in the heart of Nature's deepest seclusion. Here—only a few miles from the electric tramways and the hum of café life—one may come at any moment upon the Great Pan. One feels, in the midst of the vast silence of the forest, that there are discoveries to be made on every side.

Here—close to a town of 180,000 inhabitants—one comes without warning upon

> Tarns and hidden fountains
> Where the great elk comes to drink,

while the music of the song-birds lures one further and further into the woods. Here one finds oneself in regions where the bodies of the dead have at some seasons to be conveyed to the confines of civilisation on the backs of men, or packed on horses, before they can be coffined.

Yes, here all is peaceful and still—breathlessly still—when summer spreads her light veil over the glassy lakes and dark green leas, when the black-grouse drowses in the heather, and even the thrush in the pine-tops hushes his song.

There is breathless stillness, too, of a clear autumn evening when the birch sees its yellow silk, and the aspen its gorgeous scarlet, reflected in the black mirror of the lake, framed in the delicate pale red of the heather.

Again there is breathless stillness—perhaps even more complete—during the long night of winter, when the stars glitter over the snow-laden forest and the white-frozen surface of the lake, and no sound is heard save the soft trickle of the ice-bound river.

But there are times when this silence is broken. Shouting and laughter are heard on every lea, and all the forest farms are occupied. Bands of snow-shoers and sport-loving young people of all sorts have come up overnight,

to enjoy the freedom and fill their lungs with pure air during their short holiday.

In the shooting and fishing season it is no longer the Great Pan who reigns. Fishing-rods by the score hang over the river like a bending wood, and the guns of the city sportsmen keep up a continual popping and banging in a spirit of noisy competition. Even the boundless abundance of fish and game is thus on the decline. Waterworks have interfered with the spawning, dam after dam bars the fishes' way up stream, and the river bed lies dry for weeks together.

It was not so twenty years ago, in Fridtiof Nansen's boyhood. He was among the few, the pioneers, the elect. That Robinson Crusoe existence which less favoured boys must be content to live in imagination was vouchsafed to him in its glorious reality. Of his first expedition to the borders of that Promised Land he has himself written as follows:[1]

'I showed no great intrepidity on my first voyage of discovery, although it went no farther than to Sörkedal.

'I was somewhere about ten or eleven at the time, and up in Sörkedal lived several boys who were friends of mine, and who had asked my brothers and myself to come and see them. One afternoon in June, as we were sitting out on the steps, it came over us all of a sudden that we really ought to act upon this invitation. We had a notion that we ought to ask our parents' leave, and an equally clear notion that we shouldn't get it if we did. Father and mother were taking a siesta; we dared not disturb them, and if we waited till they awakened it would be too late to go. So we took French leave and slipped off. The first part of the way was familiar to us. We knew where

[1] In Nordahl Rolfsen's *Children's Christmas Tree.*

Engeland lay, and made our way to Bogstad without much hesitation. After that we were rather at sea; but we asked our way from point to point, first to the Sörkedal church, and after that to the farm where the boys lived. By the time we got there it was seven o'clock in the evening. Then we had to play with our friends and go and see the barn, and afterwards to do a little fishing. But it wasn't any real fun. Our consciences were so bad that we had no peace for so much as half an hour. Then the time came for us to go home, and our hearts sank so dreadfully that the way back seemed ever so much wearier than the way out. The youngest soon became footsore, and it was a melancholy procession that slowly dragged itself towards Fröen farm at eleven o'clock that night. We saw from a long way off that people were afoot; no doubt they had been searching for us. We felt anything but fearless. As we turned the corner, mother came towards us. "Is that you, boys?" "Now we're in for it!" we thought. "Where have you been?" mother asked.

'Well, we had been to Sörkedal. Now for it! But mother only said in an odd way: "You are strange boys!" And she had tears in her eyes.

'Fancy, not the least bit of a scolding! Fancy getting to bed with our blistered feet, and without the least bit of a scolding!

'And the most extraordinary part of it was that a few days later we were allowed to go again to Sörkedal. Could it be that father and mother had come to think that they had been a little too strict with us?

'We had another acquaintance, too, in Sörkedal. His name was Ola Knub, and his wife used to sell us berries. We got leave to go and see Ola Knub, and fish with him

in Nordmarken. Great was the rejoicing as we started off with coffee-kettle and fishing-rods to have a taste of backwood life up there in the forest. I shall never forget those days. I can see the wooden hut before me now, on the shore of the Langli Lake, with the long sweep of talus behind it, and the great monkshoods growing round the hut. There was freedom up there, and we could be wild-men-of-the-woods to our heart's content. No father or mother to tell us when it was bedtime or to call us in to meals. We followed our own devices in everything. The night was light and long, and sleep was brief.

'At midnight or thereabouts we crept into the hut and lay down for a couple of hours on the juniper branches; and long before the peep of day we were down at the pool catching trout. We waded in the river, we jumped from stone to stone. I well remember one time when I was jumping after Ola Knub from one stone to another. There was scant room for one, let alone two, on these stones. Presently I managed to get too close upon his heels. Ola was standing on the stone I aimed at, and I had no time to find another footing. Before I knew where I was, I found myself lying in the river with a stone under my neck, and one under my knees, and with the water foaming over me.

'While I was in my teens, I used to pass weeks at a time alone in the forest. I disliked having any equipment for my expeditions. I managed with a crust of bread and broiled my fish on the embers. I loved to live like Robinson Crusoe up there in the wilderness.'

But frequently Nansen was accompanied by his brother and an older member of the family, who happened to be an enthusiastic huntsman and fisherman. And in this way, from the age of twelve upwards, the boys trained themselves

to bear those fatigues which are the best thing in the world for hardening the muscles. The tramp became longer and longer, they pushed on farther and farther afield, as they grew older; first to Sörkedal—then to Langli River—then Svarten (the Black Lake)—Sandungen—Katnosa.

'When the oak leaf is like a mouse's ear the trout will jump for the fly'—they abode conscientiously by that saying. When the timber-floating was over—say two days after—then was the best fishing. While the 'floating' is going on there is too much food in the water; the flood washes earth away, and in the earth are worms. But by the time the river has quieted down, and the fish are hungry once more, then they rise to the fly. At this time, that is to say at the end of May, the three young fishermen would set off from Great Fröen as soon as they had swallowed the last mouthful of their Saturday dinner, carrying in their wallet some bread and butter, a piece of sausage, and a little coffee. First came a five hours' tramp—not making for any house or farm, but straight for the river. Their goal once reached, not an instant was to be wasted on rest. They did not even stop to eat, but had out their fishing rods, and cast away as long as it was light. At the darkest of the night, an hour or two of rest. For supper, coffee, and fish broiled on the embers. Then they would creep into a charcoal-hutch for an hour's nap, or else sleep under a bush. Then to work again at peep of day. A short rest at noon, and at it once more—oftentimes up to the waist in the river. There they would stand till well on in the evening, and then trudge homewards at night with their shoes full of sand and water. In the small hours of Monday morning they would reach home, tired to death, and saying to themselves there was no

sense in making such a toil of pleasure. But when they had had a good sleep, the fatigue was forgotten, and there lay the shining trout on the kitchen table. The next Saturday at three o'clock they would be off again.

The hardship was even greater as the autumn advanced and the nights turned cold. The tramps, too, became longer, when the boys grew big enough to take part in the hare-hunting at Krokskogen. This involved going for long intervals quite without food, and there would often be scarcely an hour's rest to be had for the better part of two days and two nights. They used to get so hungry that when they happened to descend upon Sandvik railway-station they cleared the refreshment counter in a twinkling of everything eatable. The man who was to become the friend and historian of the Eskimos had early experience both of fasting and voracity. Their unsavoury domestic arrangements could not dismay one who himself, during his nocturnal meals in the forest, had many a time picked up a stick from the ground and stirred his coffee with it, and who, in somewhat riper years, was able to devour with relish the raw and not over-tempting trout on the kitchen bench.

The woods of Nordmarken offered plenty of long runs for a snow-shoer who preferred to go his own way. It was here that a feeling for nature was fostered in him—a sense of the beauty of winter and summer, and of shifting atmospheric moods which do not as a rule appeal to boys. Here his tissues were hardened to face the Polar winters, while he stood in the crackling frost waiting for the hare, and envying him his warm white fur. It was hereabouts (at Fyllingen) that he was once hare-hunting with his brother for thirteen days on end. At the last they had nothing to

live on but potato cakes, and were half starved, both they and their dog. Then came killing-day at the farm, and the brothers consumed black-puddings till they nearly burst. When the time came to go home, Fridtiof had to shoulder seven hares, slung by the legs. He slipped, fell forwards, and all the hares shot out like the rays of a halo round his head.

There was one thing that used to annoy his snow-shoeing cronies in those days, and that was his total carelessness as to creature comforts. If he happened to look from the tower on Tryvand's Height away over to Stubdal, twenty miles off, a whim would all of a sudden seize him, and nothing would serve but he must set off without taking a crumb of food with him. He on one occasion descended upon a farm in Stubdal so ravenously hungry that the people did not forget his visit for many a day.

Another time he and a party of his friends set off on a long snow-shoeing expedition, each with his provision wallet on his back—each one, that is to say, except Fridtiof Nansen. But when they got to the first resting-place he unbuttoned his jacket and took out of his breast pocket—concealed deep within the lining—several pancakes, which were as hot after the snow-shoeing as if they had just come off the pan. He held them up smoking: 'Have a pancake, any of you fellows?' None of them were dainty, but the pancakes seemed even less so, and they declined with thanks. 'Well,' he said, 'the more fools you, for let me tell you there's jam in them!' It is in such traits that he shows his kinship with the denizens of the great forests. He has the recklessness of the hunter and the lumberman, their daring and headlong spirits. He is a typical east-country boy. But at the same time there is systematic

intention in the training to which he subjects himself; his alert ambition reinforces his delight in unvarnished nature, and his tendency to set at defiance the customs of civilisation. 'The least possible' is early his ideal, and he has not the slightest objection to shocking public opinion in acting up to his principles. It never occurs to him to doubt that it is he who is right and the world that is wrong. He appears to have been one of the first consistent disciples of Jaeger in Christiania, and later on, in his letters from Bergen, he boasts that now the wool theory is admitted on all hands. He quotes in this connection one of his favourite sayings: 'There was a man in a madhouse in London, who used to say: "I said the world was crazy, but the world said that I was crazy, and so they put me here."'

One thing his friends had to guard against: they must never say to him that anything was impossible, for that was inevitably the signal for him to attempt it. His boyish impetuosity brought him on one occasion to death's door—to the very verge of one of those leaps which even the expertest athlete cannot clear.

It was in 1878. On a walking tour with his brother Alexander, he came to Gjendin in the Jotunheim, and must needs climb the Svartdal Peak. There was a way round the back of the mountain which was more or less practicable, but Fridtiof would have none of that; he must of course go straight up the precipitous black face of the hill. 'As we got up towards the peak,' his brother relates, 'there was a snow-field which we had to cross. Beyond the snow-field lay the precipice, straight down into the valley. I had already had several attacks of giddiness, so that Fridtiof had given me his alpenstock, and was without it when it

came to crossing the glacier. Instead of going carefully step by step, as he would do now, he goes at it with a rush, slips, and begins to slide down. I can see him turn pale. A few seconds more, and he will lie crushed to death in the valley. He digs his heels and nails into the ice, and brings himself to a standstill in the nick of time. That moment I shall never forget. Nor shall I forget his coming down to the tourist châlet and disappearing into the trousers which the burly secretary of the Tourist Club, N. G. Dietrichson, had to lend him, an essential part of his own having yielded to the friction of the glacier.'

The same year in which Fridtiof Nansen was in the Jotunheim, he had his first experience of ptarmigan shooting in the mountains—Norefjeld and thereabouts—and it was then they went on a tramp so exhausting that one of his brothers fell asleep far up on the heights, and had to be hauled along with the greatest difficulty. It was probably these early hunting expeditions through the forest and over the mountain plateaux that gave him his taste for the accurate observation of animal life, and thus supplied the initial impulse towards the line of study which he finally chose. In the year 1880 he matriculated with sufficient credit to prove that his distractions during schooltime had not been so absorbing as to prevent him from settling down to work when the moment arrived. He got a first class in all natural science subjects, mathematics and history; and when, in December 1881, he went up for his second examination, he was classed as *laudabilis præ ceteris*. He appears about this time to have been in some uncertainty as to his choice of a career. He was entered as a cadet at the military academy, but the nomination was cancelled when he finally resolved to

continue his scientific studies. He never contemplated going into the medical profession, but had at one time an idea of taking the first part of the medical examination. It ended, however, in his choosing a special branch, Zoology. As early as January 1882 he applies to Professor Collett for advice. The Professor happens to remember how he himself has been urged by Arctic seamen to go with them and prosecute his studies during a sealing expedition. This ought to be the very thing for Nansen. He is an expert sportsman and a good shot—why should he not go to the Arctic regions on board a sealing vessel, make his observations, keep a record, and train himself for descriptive zoological research? Nansen came to see him, and he made the suggestion, which took hold of the young man at once. A week later he again called on the Professor, having in the meantime spoken to Captain Krefting of the sealer *Viking*, and arranged matters with him. On January 23, Nansen's father telegraphed to an old friend in Arendal asking him to secure the shipowners' sanction. The friend (to whom we are indebted for this information) was able, when called upon, to declare that Fridtiof Nansen was a sturdy, strapping fellow, ready with his hands, and capable of great endurance, so that, to the best of the witness's belief, he would prove a useful and desirable member of the expedition. Permission was instantly wired back, and Nansen, having employed the brief interval at the University in studying the anatomy of the seal, sailed from the port of Arendal on board the *Viking* on Saturday, March 11.

So easy are the transitions, so clear is the continuity of events, in the life of this young man, which to the outside observer seems to consist of one or two isolated exploits.

The hare-shooter of Nordmarken becomes the seal-shooter of the Polar Sea, passing from the untrodden forest to the eternal ice. By gentle degrees, and without any painful wrench, his lucky star guides him almost imperceptibly towards the great waste from which his name is to ring out over the world.

CHAPTER IV

IN THE POLAR SEA

NANSEN himself felt that a new chapter in his life was opening auspiciously when the sun rose above the sea and the skerries on that morning in March. He longed for the great ice-fields; but he realised, too, that he was sailing away from the spring, away from the woods and the green leas, to a world where there would be hardly so much as a stone to be seen, and never a tree or a friendly grass-patch.[1] For the first time in his life he was to be cut off from the Norwegian spring: 'he was not to wander in the pine woods inhaling the fragrant breezes, and with them great draughts of courage and energy; he was not to splash about among the rocks and islets, and welcome the birds of passage, bringing with them new life and new hope.'

The first incident of the voyage is the sighting of a derelict wreck. Then there comes a stiff gale; the main-yard is carried away and the deck is swept by the seas. In the evenings the phosphorescence plays in the spray like flame. Day after day he notes in his diary: numbers of petrels—petrels of every variety. On March 18 the ice is sighted. He has more than once described his first impressions, drawing upon his diary. Shortly before starting on his Polar expedition, he wrote as follows:[2]—

[1] This chapter is mainly founded upon Nansen's unpublished diary of his first Arctic voyage.

[2] In Nordahl Rolfsen's *Reading Book for Norwegian National Schools.*

'The Polar Sea is a thing by itself, unlike everything else, and above all unlike what one is apt to imagine. Of course I had read a good deal about it before I went north the first time, and had conceived it to be a world of huge ice-mountains, where splendid towers and shimmering pinnacles soared heavenwards on every side, in every possible shape and hue, varied by vast unbroken fields of ice. But I found nothing of all this. What I did find was flat white floes of drift-ice rocking on the greenish-blue waves—alternate fog and sunshine, storm and calm.

'As I close my eyes now and think of it, a host of memories crowd upon me; but one or two are specially vivid.

'Most vivid of all, perhaps, is my first view of that world. It was in the month of March. For seven days and nights we had sailed northward from Norway. It blew great guns on the North Sea, but we had crowded on all sail and pounded ahead at a spanking rate. We carried away our mainyard, but that made no difference. We had to push on—our business was to catch seals, and we were already later than we ought to have been.

'The first sign that we were approaching the Polar Sea was the appearance of a green sea-gull or "storm-horse." Somewhere about the Arctic Circle he came to greet us, hovering on wide-spread wings over the endless blue wave-crests. Far out on the ocean, hundreds of miles from any land, he keeps watch at the entrance to the Polar regions. None can pass in without his escort, he haunts the wake of every ship. He had been following us a couple of days, and the sea was beginning to grow greener—we were approaching Jan Mayen—when, on the evening of the seventh day, the cry went forth 'Ice ahead!' I rushed on

deck and looked out—it was black night all around. But suddenly something huge and white loomed out through darkness—it came nearer, it grew bigger and whiter, like driven snow against the jet-black sea. It was the first ice-floe we were passing. Then came others; they cropped up far ahead, glided by with a lapping sound as the sea washed over them, and were left far behind. They were only



IN THE POLAR SEA. I

scattered outposts. But suddenly I was conscious of a strange brightening over the northern sky, strongest on the very rim of the horizon, but perceptible right up to the zenith—a mysterious half-light, like the reflection of a great conflagration far, far away—indeed, in the world of spirits it would seem, for the light was of a ghostly whiteness. Then, too, I heard a dull roar which filled the air to the northward, like surf breaking upon rocks.

'It was nothing more or less than white masses of drift-ice ahead of us. The light was the reflection which it casts upon the misty or cloudy sky, and the noise came from the breaking of the sea over the floes, as it hurls them, crashing, one against the other. On quiet nights it can be heard far out at sea.

'It was a strange experience to stand gazing into the night and listening, as we sailed into this new and unknown world of ice. The roar grew louder and louder, and was heard now on all sides; the floes drifted past us more frequently. From time to time the ship struck upon a floe, lifting it up on end with a mighty crash, and hurling it aside from the sturdy bow.'

The next morning finds him in the thick of the ice. Dazzling white, the new-fallen snow lies over all—not a patch that is not white. The ice-gulls and the fishing-gulls appear. Snow-buntings alight merrily on the ice-floes close to the ship, hop about, stick their bills in the snow, and dart off again, as gaily as the sparrows at home flit about the farmyard.

The next day there is a storm: the captain sticks to his course through the ice; the storm becomes a hurricane (the diary conscientiously records 'Wind velocity 6'); the ship quivers like a leaf and groans in every joint. The entries of the succeeding days are full of breathless excitement, for now they ought at any moment to drop across the seals. Will they lie to the eastward or to the westward this year? Everybody agrees that it is a confounded nuisance not to have been on the spot early enough to find the seals in the water. They are probably to the westward; but suppose they should be to the east and one goes west, or *vice versâ* —there would be no time to rectify the mistake. It is no mere question of a hare more or less, or of a passing dis-

appointment to the noble ambition of the sportsman—great sums are at stake, to be won or lost, thousands for the owners, hundreds for the common seal-hunters. They have no idea where they are, being unable to take proper observations. Then, in the midst of the direst uneasiness, two ships are sighted to leeward. They crowd on sail and steam to make up to them. At last the *Viking* overhauls one of them. It is the *Vega*, which carried Nordenskiöld through the North-East Passage, and is now seal-hunting. It lies there proudly in the moonlight with its airy rigging. Fridtiof Nansen looks with reverence at the famous ship, while the crew about him put in their word in their own way. 'That's the vessel, my lad, that's been the long round.' 'There have been grand doings aboard her in her time.' 'I'd have given something to have seen the fun at Naples.'

The captains hold a council that lasts far into the night, and next day the two ships make the best of their way northward. The third ship, the *Novaia Semlia* of Dundee, follows under sail and steam. They are on the look-out for the northern bight in the ice, although they are now at N. latitude 74° 50′, and it has scarcely ever been known to be further north than that. Then they have a storm, and after that fog. Fresh consultations and growing uncertainty. If they could manage it, they ought to feel their way westward. On the evening of the 28th, five ships are sighted to the south. Consultation follows consultation when the five ships are within hail. April 1 comes, and on the 3rd the hunting of the young seal ought to begin; there is not much hope now of their reaching the right spot in time. First and foremost they must try, if they possibly can, to get out of the ice. A message is sent to the other ships for men to come and help to 'spring' the vessel. Soon a hundred men are assembled

on the deck of the *Viking* and begin to tramp merrily backwards and forwards. It succeeds splendidly. The ship glides on from one patch of open water to another. Then it sticks. A couple of revolutions astern, and then on again at full speed. The assembled crews dash themselves with all their might against the bulwarks, and the ice has to give way; it rears up on end before the bow, is forced aside or else under the keel, and now the ship glides on again for a long stretch. The propeller now and again thrashes against the blocks of ice so that the whole ship trembles, reminding them of the risk they are running; but on they go.

By evening they are out of the thick ice and in among the blue ice and the clear water. There is a full moon, and the stars are shining. The moonlight is reflected from the open spaces of water, and occasional white ice-floes lie scattered through the blue ice. The sky to the north-west is a purplish red, otherwise the horizon is a yellowish white. This is again the moonlight, reflected from the distant ice-fields.

But high spirits cannot be said to reign on board the *Viking* on the evening of April 2. That night at twelve o'clock the killing of the young seals[1] would begin for those who had reached the sealing-grounds. On April 8 a hurricane comes on. The spaces of clear water grow bigger and bigger, and more and more frequent; it seems as though a prison gate were burst open in the clamour of the elements. The whole mass of ice starts drifting towards the east. Next day they take the longitude and see, to their consternation, that they are $13\frac{1}{2}^{\circ}$ E. It is unheard of that there

[1] At the end of March the seals calve, and the taking of the young seals is the first concern. That done, the sealers go on to Denmark Strait after the bladder-nose seal, a very large variety, so called because the male has a piece of skin on its snout which it can blow up like a bladder.

should be ice in these longitudes; they must be in the midst of the Gulf Stream. Again they fall in with two ships. The captains reckon and reckon, and make out that now there are twelve ships in all that have missed the sealing. So, after all, things look a little brighter. But the days go by —they sail on and on—would it not be better, perhaps, to make straight for Greenland, and not waste more time over the young seals? Three ships sighted to windward, and later on several more. Fresh councils and consultations. The upshot of it is that not a single ship has reached the sealing-grounds, unless, perhaps, the *Capella*. New courage —hurrah! And they settle down to the search again. But in the midst of all this searching, the aspects of the Polar Sea imprint themselves more and more deeply upon a young and impressionable mind, prepared to recognise the beauties of Nature in all her manifestations. His keen eye penetrates the monotony of the ice-field and the sea, finding subtle differences and rejoicing in them. 'There is a splendid play of colour in the sky, now the brightness of the gleaming snow, now the dusk of the sea, now the red glow of the sun, now yellow when the sunlight mingles with the snowlight. And then the ice! Now shading off into green, now more of a blue, while in the depths of the caves it is almost ultramarine.' 'Most people would be wearied,' we read further in the diary, 'by the stillness and silence of Nature and the interminable ice-fields. They would feel lonely and helpless, they would miss the life, the smiling meadows, the grazing cattle, the smoke curling up from the cottages where the evening porridge is cooking. Such sights are not to be found here, where every trace of the work of man is instantly obliterated like the wake of a ship breaking through ice, which is frozen over again before five minutes have passed. But he who

seeks for peace in Nature, immutability, and freedom, will here find what he wants.' The same craving which early in life drove him into the dense forests of Nordmark finds satisfaction now in the open ice-field. He has been trained to love solitude, he feels himself at home in it, and finds it charged with life and meaning.

But to the seal-hunters on board the *Viking* it becomes plain at last, after five weeks' searching, that they have hopelessly lost their first great stake. By April 25 they begin to find a few young seals lying about on the ice. The weather is foggy, but not so thick but that they can see a ship ahead of them, with furled sails; and presently several more are descried. They make for the first; it is the *Cap Nord*. Why is this vessel lying here with furled sails? Is it loaded, and are they boiling down blubber? It seems low in the water. Or is it close to the sealing-ground and waiting for less sea? Excitement rises to fever heat on board the *Viking*. At last the ships are within hail. The captain of the *Cap Nord* shouts: 'Why, where on earth have you been, Captain Krefting?' The question goes like a stab to every heart. Here they lie, one ship after another —the *Novaia Semlia* is loaded to the water's edge unable even to carry all its take. The *Vega* is laden, the *Capella* is almost laden, the *Albert* has 14,000, the *Hekla* 10,000 or 12,000, the *Cap Nord* itself has 6,000. The sealing-ground lay four miles W.N.W. from where we had stuck fast. We should have been able to see them had it been clear.

On May 2, a glimpse of Spitzbergen. Secret longing for the herds of reindeer and the eider haunts. But the course lies westward. By the 25th they are off the coast of Iceland. The glaciers on the Eyafialla-jökel glow in the sunset, and the dark ragged lava peaks of the Vestmanna Islands

stand out wild and threatening against the purple horizon. Here in Iceland Nansen once more feels solid earth under his feet for a short time. In a great cave hollowed out of a lava cliff they find an excellent boat-harbour, where they land. Black lava everywhere, far as the eye can reach. They visit the lighthouse-man in his hut. A little way off, the ground is smoking as it does in a heath fire at home—



IN THE POLAR SEA. II

hot springs, which must of course be investigated. With slippers on their feet, off they set over the rough lava, get a whiff of the sulphur, and then back again to the hut. Here and there is a stunted juniper or a tuft of heather; here and there a little withered grass; and with that the sheep must be content. But the mountain fox carries off the sheep, and the raven carries off the lambs, and the half-starved golden plover freezes to death in the cold.

Off they set to sea again, and the diary tells of repeated seal-hunting expeditions in the boats; but the big prize in the lottery was not for them. On the evening of June 16 they had a regular set-to with the ice, blocks toppling over close to the ship, others shooting up from the depths with such a rush that they might well have knocked a hole in her if they had happened to strike the right spot. Every time the ship's bows fell into the trough of the sea, she sustained such shocks that she groaned in every joint and trembled like a leaf. The crew felt anything but safe. All went well, however. The last small icebergs were cleared during the night, and the ship was in open water again. The next morning at breakfast the captain said: 'I am certain that we shall get some seals to-day. Don't you remember, steward, how, last time the ice played us these tricks, we sailed straight into the seals and took over nine hundred?'

And the captain was right. In the evening all the ten boats are lowered. Every one is in the highest spirits, jests fly about while the shots are cracking; and this time it is a downright battle, and a battle that lasts for three days on end. When seal-hunting is at its height, sleep is not to be thought of. Meanwhile other ships lie outside and have to content themselves with looking on—an impenetrable barrier of ice shuts them off from the hunt. But the *Viking* was in dire need of some such haul as this. It was the one bright spot of the cruise.

At the end of June the ship froze fast off the coast of East Greenland at 66° 50′ N. latitude, and remained drifting about for a month in the very middle of the best sealing season. Another lost game for the *Viking*; but for Nansen these were in every respect the most memorable days of the

whole expedition. Now, at last, he could gratify his fondest ambition and come to close quarters with the Polar bear. Hitherto he had been as zealous a seal-hunter as any of them, and had carried on his work as zoologist and observer with the utmost conscientiousness. To this day Professor Mohn's instructions, which he followed to the letter, lie between the leaves of his diary. He had investigated every living thing he could lay his hands on, whether in the air or in the water, and had trained himself to look at things with the eyes of a man of science. But like the passionate sportsman he was, he had all the time been burning for an encounter with the four-footed sovereign of the Arctic Seas; and here, where they lay drifting helplessly, it turned out that they had, so to speak, stumbled plump on the preserves of the Polar bear. Nansen has himself drawn upon his diary for vivacious descriptions of these bear-hunts.[1] Day after day was filled with the delicious unrest of the hunter, and he had never a moment's peace. Now there comes a cry from the crow's-nest in the early evening. 'A bear to leeward!' Now he is wakened out of his beauty-sleep by some one whispering in his ear: 'Look sharp! Turn out! There's a bear close up to the ship's side.' Now he has to jump up from the dinner-table (that is to say, at ten o'clock at night), and again he must stop in the midst of his deep-sea dredging, at a shout from the crow's-nest—'A bear on the lee quarter!' Away with the dredge and out with the gun; the bear is shot, and Nansen goes calmly on with his work, which lies a hundred fathoms down in the sea. He does not get to sleep until four o'clock, and then only to be dragged up an hour or two later: 'Another bear in sight!' On July 6 the spirits of

[1] *Norsk Idrætsblad, 1883.*

the crew are at the lowest ebb; they have made up their minds that they will never get out of the ice alive, but will either be crushed between the ice-floes, or else lie there till they die of starvation. Nansen and the captain betake themselves to the fo'c'sle to cheer them up. They promise to keep life in them with bears' flesh; or, in the event of the ship being crushed, they could all get on shore and set up a new colony on the coast of Greenland, where there was sure to be an abundance of provender; reindeer, musk-ox, Polar bear, moss, and other delicacies. But all the consolation is wasted. Just then, from overhead, rings the cry, 'Three bears to leeward!' It turns out to be a she-bear with two cubs. They are all three shot; and for days the sailors live on bear-steaks and delicious 'hearts.' They make a bonfire on the ice of the old meat, feeding it generously with blubber, and keeping it up for several days. It makes a very good lure. During these days there are sighted from the crow's-nest about twenty bears in all. On July 12 Nansen writes in his diary: 'In the afternoon I went up into the crow's-nest to sketch a bit of Greenland. First I scanned the ice carefully with the glass to make sure that there were no bears about, and then I began my sketch. The men had turned in for a little rest, and all was quiet on deck; only "the Balloon,"[1] who had the watch, was pacing up and down. I was buried in my work and had almost forgotten where I was, when suddenly I heard "the Balloon" call out: "Why, look at the bear!" Like lightning I sprang up and peered over the edge of the crow's-nest; there, sure enough, stood a bear just under the bow of the ship. Pencil and sketch-book were thrown aside—out by the backstays and down

[1] One of the crew.

through the rigging I clambered, reached the deck at a rush, and tore below after rifle and cartridges.' But by this time the bear had got scared, and both he and his comrade, who was not far off, shambled away. Nansen, who was dressed in gymnastic shoes and jersey, ran a race with them; but they easily kept the lead. The *Viking* signalled him back, and he had to give in. Of course the captain chaffed him well about the splendid outlook he kept for bears. 'A nice fellow to have on watch, who can't see them even when they're close under the bow!'

But Nansen had his revenge. On July 14 he went on his last bear-hunt, and this time he took part in a race which quite restored his character. The bear was a big fellow, but he shambled off as the two others did. 'Now was the time to put on steam, for it went at a good pace. We (the captain, one of the sailors, and I) rushed after it, keeping under cover as much as we could. When you are in a hurry you are apt to forget caution, and so I forgot the treacherous edges of the ice, hollowed out by the water underneath, and stretching in a brittle crust well out over the pools of open sea, but looking quite strong and solid from above. We came to a broad pool which it was possible, though difficult, to clear at a jump. I rushed at it, making a good spring to cover the distance; but, as ill luck would have it, there was just such a hollow edge, which gave way beneath my feet, and instead of reaching the other side I plumped straight into the water. Well, it was rather cold; but the main thing was to keep my rifle in order. I pitched it up on to the other side, but the ice was high; the rifle didn't quite clear it and slipped down again into the water. I dived and got hold of it. In my vexation, I this time flung it well on to the ice-floe, and then

swam on, to a place where I myself could clamber up and recover the rifle. A hasty examination of lock and barrel, and then off again. The cartridges, I knew, would be all right, for they were watertight Remingtons. In the meantime the captain had got a little start of me. Having seen me fall in, and assured himself that there was no harm done, he crossed the pool at another point and went ahead. Luckily I was very lightly clothed that day too, in gymnastic-shoes and jersey, without any jacket, so that I had not much water to carry; it ran off almost as quickly as it had soaked in. Consequently I was not long in making up for lost time, and when I saw the bear disappearing behind an ice-hummock I made straight for it. No sooner had I reached the knoll and peered over the crest of it, than I found myself face to face with the bear. Up went the rifle to my cheek, but Bruin was quicker than I, and threw himself over the edge of the ice into the water —the bullet only hit him in the hind-quarters as he disappeared. I sprang over the crest of the knoll and rushed to the edge of the ice to have a shot at him in the water, but no bear was to be seen. Where was he? I caught a glimpse of something white deep down in the water, and understood the situation. But the pool was a long one, and I must make haste to get over to the other side in order to receive him there. I caught sight of two small floes in the middle of the open water. It was a long jump, but I had to try it. I made my leap, and landed all right on one of the floes. It just bore me, and no more. While I was unsteadily getting my balance, up shot the bear's head like lightning close to the floe beyond. He clambered up on the ice, roaring, and the next moment he would probably have been upon me, but luckily I was beforehand with him,

recovered my balance, and lodged a bullet in the middle of Bruin's breast, so that the fur was blackened by the powder. He fell back into the water and breathed his last, I had almost said "in my arms." That was not quite the case; but I held him by the ears as he showed signs of sinking—much to my surprise, since at this season the bears are generally so fat as to float. The others soon came up and helped me out of my predicament. We had nothing to haul the bear up with but my leather belt, and that was little enough. The belt was passed round his neck, and by this means we towed him off to an inlet in the ice. Now there was no more danger of his sinking, and we could take it easy and warp him up by slow degrees. He was an unusually big fellow, one of the very biggest we got. His skin lies under my writing-table, and I can literally say that "I sit with my foot on my enemy's neck." It was a long way to the ship, and a good hour passed before any one came to our assistance. In the meantime we set to work to cut up the carcase; but I was presently dismissed from this part of the business. The captain said I was wet and cold, and must be so good as to take myself off to the ship.

'Unreasonable as it seemed, I let him have his way and turned back. I was accustomed to find him in the right, and this time, as usual, I had no reason to regret my submission. As I drew near the ship, I caught sight of three of the men a good way off on the ice. Only two of them, so far as I could see, had their rifles. I puzzled my brains as to where they could be going, and learned when I got on board, they had gone bear-hunting; but there was no hope of my being in time for the fun, as they were already within range. Very well, I thought, I've had enough for one day; they're welcome to this one. Then some one happened to

remark that there were three bears. That was too much. I might have let them have one, but out of three, one really must fall to my share; and off I set again as fast as my legs could carry me. I was wet already, and a little water more or less didn't matter; so I was not under the necessity of making many detours on account of the pools of open sea. Soon I made up on them, and saw they were lying in



IN THE POLAR SEA. III

wait for a bear who was coming towards them. I stopped a short distance off, so as not to spoil sport; but the others, probably fearing that I might be beforehand with them, fired too soon and only wounded the bear, who rushed off roaring. Now it was my turn. I sent a shot through his breast and he fell, but got up again and began to run. I tore after him, and when he turned at bay and came towards me, I sent a bullet through his head that finished him.

'Now for the next one. At a signal from the ship we went in the direction indicated, and presently caught sight of the bear. He was standing still, devouring the carcase of a seal, and so absorbed in the occupation that we got within easy range without being noticed. As I was not sure of the others, I preferred to shoot from where I was. I whistled to make the bear look up—but not a bit of it! I whistled again, still without effect; then with all my might—and at last he raised his head. I aimed behind the shoulder-blade and blazed away, and simultaneously the two others fired. The bear roared and staggered backwards into the water. I sprang forward to the edge of the ice; but thinking he had had about enough, I allowed him to swim quietly over to the other side, intending to give him his quietus when he had got well up on the ice, so as to save us the trouble of hauling him up. But this time I had reckoned without my host, for the bear must needs land by an ice-hummock, clamber up as lightly as a cat, and, covered by the hummock, go gaily on his way. There I stood with a very long face, and could only send an ineffectual bullet in his wake. But then began a race which turned out an ample compensation for the disappointment. Oluf, who had no rifle and carried nothing but an ice-pick and a rope, accompanied me a little way, but remained behind at the first bit of open water which was too wide to jump. I couldn't be bothered going round, and took to the water. I heard a roar of laughter behind me. It was Oluf, who had never seen people getting over the open spaces like that before. He was for doing it a better way—with the ice-pick he managed to get a small floe into the middle of the pool, so that he could jump on it. He made a leap, but this time it was my turn to laugh, for he landed neatly on the edge, so that he

found himself in water up to his waist, and of course got his high sea-boots full of water. So now there was a long emptying process to be gone through, which I, with my canvas shoes, did not require, and had not the time to wait for. Thus the bear and I were left alone to try our strength, and we had both of us determined to do our uttermost. He ran for life, and I for honour; for it would have been disgraceful to get so near as that to a bear and then lose him after all. My bullet had hit him right enough behind the shoulder-blade; but by mistake I had got hold of a cartridge with a hollow ball, and had thus only given him a surface wound, which did not seem to trouble him very much. However, the wound bled a good deal, and the track was not difficult to follow. The bullets of the others had not hit him. So off we set over the ice as fast as our legs would carry us; sometimes I made up on the bear, sometimes he widened the distance between us. In this way we dashed over one ice-floe after another. If the open pools were too wide to jump, I simply swam them, for there was no time to be lost in "going round about."[1] Stretch after stretch lay behind us, and the bear seemed unwearied; but at last he took to doubling, and that enabled me to make short cuts which helped me a good deal. I now saw he was beginning to be tired, so I took it easier, until I saw him disappear behind an ice-hummock. Under cover of this I set off again at the top of my speed, expecting to get a good shot at him; but no! he saw my dodge and renewed his exertions. He kept up the pace for a little while, and then slowed down again. Finally, I got within range and sent a bullet through his breast. He made a couple of plunges and then fell. A bullet behind the ear finished him off.

[1] See *Peer Gynt*, Act II. sc. 7.

'So there I stood alone with a dead bear. A rifle without cartridges and a penknife were my only weapons, for I had lent the captain my sheath knife to cut up the other bear. The first thing to be done was to signal to the ship for help, but I could see nothing of her except the masts. So I climbed up on the highest ice-hummock I could find and waved with my cap on the end of my gun-barrel. Then I began to skin the bear with my penknife, so that I might at least take his skin back with me. It was a long business, for the head and paws had to be cut off to go with the skin; however, with care and patience I got on, and had nearly finished when in the distance I heard a voice. I mounted a knoll to see who it was, and found it was Oluf, who had at last caught me up. He was heartily glad to find me, for he had been running with his heart in his mouth for fear of meeting the bear; and no wonder, since his only arms were an ice-pick and a packet of cartridges. We finished the skinning and began the rather troublesome task of dragging the skin home to the ship; for a fell like this one, with its layer of blubber weighing perhaps half a hundredweight, is no light burden. However, we had not gone far before we met the men who had come to help us. We gladly handed over to them the skin, the rifle, and Oluf's cartridges; for they are very unwilling to be out on the ice without arms, for fear of coming across bears.

'Oluf and I, feeling we had done our share, left them and betook ourselves to the ship. On the way back, Oluf was much taken up with my method of crossing the open pools, which was something quite new to him; he could not get over his annoyance at being left behind with his old sea-boots. On the way we met an embassage from the captain with beer and food. I was quite touched by this atten-

tion, and I can assure you both Oluf and I enjoyed our picnic. When I got on board I was told that the third bear also had been close at hand, but had made off. We ought to have had him too, so that our whole bag might have been an even score. As it was, we had only nineteen, and with that we had to be contented.

'That was our last hunt. A few days afterwards the ice broke up and we got away. The seal-hunting was over now, and there was nothing else to do but to steer for home. Once more the *Viking* leaped over the crests of the waves as fast as sail and steam could carry her, and great was the rejoicing on board when the peaks of dear old Norway's weather-beaten mountains rose up out of the sea.'

Nansen concludes with thanks to Captain Krefting for all the pleasant hours they had spent together in the Arctic regions. Krefting was the very type of a sturdy, fearless, and enterprising Arctic skipper. We have little doubt that this was a case of the meeting of two kindred natures, and that Krefting's personality influenced and developed Nansen's innate gifts. They became fast friends; and the crew of the *Viking* still give the 'Nansen-trip' the place of honour amongst all their Arctic expeditions. Companionable and courageous, he was liked and respected by every one; and there were among them some rough customers who were none the worse for rubbing shoulders with a man of education. And then he was such good company —he would sit in the cabin with them, yarning the whole night through, and he knew the real name as well as the nickname of every man on board. To this day, several of the seal-hunters have hanging on their wall a photograph of the whole ship's company. There they stand, seventy-two

men, grouped behind a huge Polar bear, the hunters with their guns, the others with ice-picks and staves.

'But where is Nansen?'

'Nansen? Why, he is standing in front and doing the photographing, don't you see?'

It seems as though all these appliances of his introduced a softening touch of civilisation amongst the wastes of the Polar Sea. He has his hands full; everything that he sees, the smallest animal or insect, he insists on getting hold of. In the sea, alongside the ship, hang his nets, in which he catches his smaller specimens of marine life. Did he not catch a young seal and feed it and tend it for eight whole days? 'But he couldn't photograph it,' says the sealer, recalling these days. 'The young seals aren't accustomed to that sort of thing. No one asks them if they'd like to be photographed before he knocks them on the head. Every blessed day Nansen had this one out and made the attempt. He would pose it so nicely on the main hatch, and all would go well up to the moment of taking the cap off the camera; then it would begin to flap about, and the picture would be nothing but a blur of mist.'

Then, too, Nansen was the most zealous sportsman, and utterly reckless of life and limb. 'I well remember being out on the ice one time,' says the same shipmate, 'when we heard some of the men calling for help. The skipper and Nansen were on board—the mate was up in the rigging with the spy-glass. We were so near we could hear him shouting that some of the boys had got out on an ice-floe and that a bear was after them. They had no guns with them. The bear was making for the open water astern of the ship and evidently meant to swim across. I rushed

off on the instant as hard as I could pelt. Nansen and the captain did the same—but they were a little behind. When I got within sight of the bear he was scarcely two bounds from the water. It was a long shot, and I was out of breath with running, but I couldn't wait any longer. If the bear succeeded in reaching the ice-floe, I wouldn't dare to shoot for fear of hitting one of my mates.

'When I had fired, I heard Nansen calling, "Have you hit him?" And when he heard it was all over with the bear he stopped dead as if he had been shot himself. I believe he'd rather have had the bear carry off one of the fellows first, if only he could have had a shot at both of them afterwards.

'My word, he was a great fellow for bears! When there was a race between him and one of them, it was a case of two chips of the same block; Nansen was as much under water as above it, just like the bear. I told him often enough that he'd end by ruining his health, going on like that. But he only pointed to his woollen clothing —"I'm never cold," he said.'

We have Fridtiof Nansen's own word for it that these weeks off the east coast of Greenland exercised a determining influence over him. 'By day the peaks and the glaciers lay glittering beyond the drift ice; in the evening and at night, when the sun tinged them with colour and set air and clouds on fire behind them, their wild beauty was thrown into even bolder relief.'

He brooded incessantly over plans for reaching that coast which so many have sought in vain. It must be possible, he thought, to make your way over the ice, dragging your boat along with you. He wanted to set off alone and walk ashore, but permission was refused him.

Already he had begun to entertain notions of penetrating to the heart of the country; and within a year of his return to Norway, the idea of crossing Greenland on snow-shoes had taken firm root in his mind. So close is the connection between the first expedition to Greenland and the second. That lucky star which never deserts him keeps him drifting off this coast for twenty-four days and nights, drawing him nearer and nearer to it; and while the others are filled with terror, the radiance of the summer night sets his yearning soul aglow for the land of adventure. Ambition awakens and chooses the most strenuous of tasks.

CHAPTER V

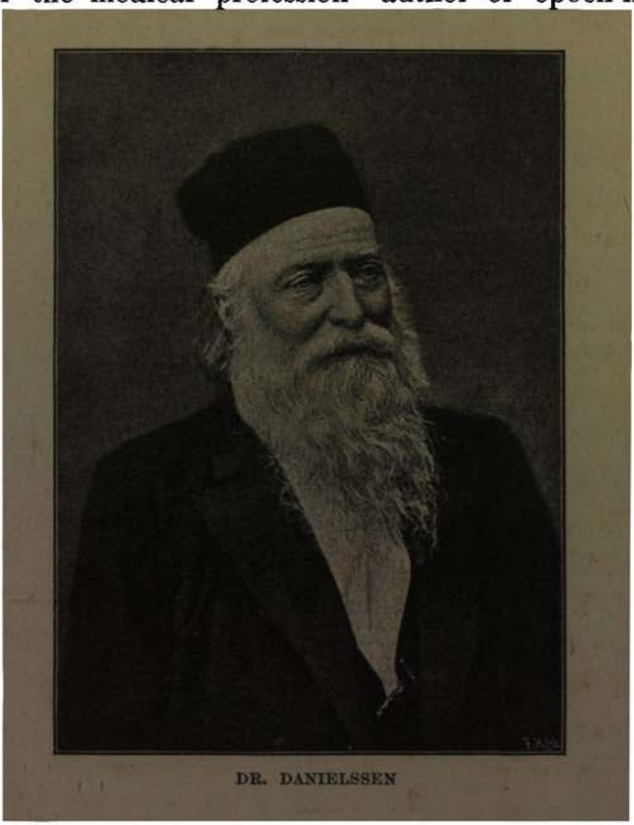
IN BERGEN

WHILE Fridtiof Nansen was swimming across the rifts in the ice after Polar bears, the Director-in-Chief of the Bergen Museum, Dr. Danielssen,[1] was going his wonted round from the Lungegaard Hospital to the Museum and from the Museum to the Lungegaard Hospital, and turning things over in his mind. He needed a new assistant, Olaf Jensen[2] having resigned his post. Before the bear-hunter had reached Christiania, Professor Robert Collett was applied to by telegraph for his advice. He thought instantly of Nansen, and asked him, the moment he set foot on shore, if he would care to become Curator (*Konservator*) of the Bergen Museum. He agreed at once. He was not yet twenty-one, and had done nothing whatever to make his mark in science; so it was certainly a very tempting offer. But he wanted first to pay a visit to a sister in Denmark; and this was reported to Danielssen by wire. We, having known the old Director, can literally hear him growling as he paces about the Museum: 'Who ever heard the like? Has the chance of becoming Curator of the Bergen Museum before he's well out of his teens, and wants to go and visit his sister! Who ever heard of such sentimentality?' He wired back: *Nansen*

[1] Born in Bergen July 4, 1815; died in Bergen July 13, 1894.
[2] Born 1847; Curator of Bergen Museum 1874-82. Died 1887.

must come at once. This was the first characteristic greeting from a personage under whose eye the young man was destined to work for several years to come.

Daniel Cornelius Danielssen, the son of a clock-maker, had begun life as a druggist's apprentice, and was now at the head of the medical profession—author of epoch-making



DR. DANIELSSEN

works on leprosy, a distinguished zoologist, honorary graduate of the Universities of Lund and Copenhagen, and one of the most interesting figures in our scientific and public life. A thin little man, who had early triumphed over death in the shape of tuberculosis, he always dragged one foot a little after the other, on account of an old attack of hip disease,

yet was always first on the spot at all the hundreds of meetings which he had to take part in or to preside over. His face of statuesque beauty, which never showed any signs of sleeplessness or over-study; his eyes that were always so brilliant, and, if occasion demanded, so threatening; his irresistible gift of persuasion in private talk, his daring cut-and-thrust style of argument in public debate, which reminded one a little of a ship hacking its way foot by foot through the ice—all this combines to form a picture which cannot fade from the memory. Here was a working capacity which might be said to know no limits, an untrammelled energy, an incompressible elasticity; here was a rare combination of fiery ardour and unflagging perseverance. Whereas many another fine talent has withered away in a small town for lack of emulation, and because the atmosphere of every-day life is too enervating to permit of spiritual growth, Dr. Danielssen, instead of either flying or surrendering, chose rather to re-create the town in his own image. Instead of throwing up the sponge on realising his isolation, he kept the fight going through a long series of years, and won protection, both in the Storthing and in the Town Council, for interests, nominally his own, which were in reality those of society at large. On the spot where his ashes now rest, he built for himself a monument where his spirit lives on; and that monument is the Bergen Museum.[1] As it is to-day, he may be said to have created it. He it was, and practically he alone, who rescued it from the condition of a mere collection of curiosities, and made it an instrument of popular education and an Academy of Science. This man, who came through all the sorrows of

[1] See obituary notice by J. Brunchorst, in the *Annual Report of the Bergen Museum for* 1893. Bergen, 1894.

life with renewed vigour, seemed to have taken for his life-motto the old saying of the *Haavamaal*:

> Kine die,
> Kindred die,
> Thyself thou shalt die one day.
> One thing I know
> That never dies:
> Men's deeming as to the dead.

And he knew that this 'deeming' would be founded upon the work he had left behind him.

Danielssen was a man who remained young to the last. He loved youth, but he exacted great things of it. 'His idea was,' writes one who for many years was a fellow-worker of his and of Nansen's, 'that a young fellow ought to be able to cope with any and every thing. He was pleased and cordial when a given task was accomplished, and scolded if it didn't go as quickly as he thought it ought to. His method was excellent in the case of a man of many interests, high intelligence, and great industry. These qualities Nansen possessed.'

So far as we know, Dr. Danielssen had no direct influence on Nansen's choice of subjects at the Bergen Museum. But his very personality was an incentive. At ten o'clock every morning this man of sixty-seven mounted the Museum Hill and sat himself down to his work-table. Already a portion of the day's business lay behind him—he had gone his morning rounds at the Lungegaard Hospital. A young man entering on his career under Danielssen's auspices, soon found that although the claims of science were inexorable, it did not at all exact a life of cloistral seclusion; for to this veteran nothing human was alien. He had himself been a member of the Storthing, and he followed the political development of the country with the liveliest interest. He

had taken part in the foundation of the Norwegian Theatre,[1] the Bergen Art Gallery, and the Bergen Athenæum. He was chairman of *Det nyttige Selskab* (literally 'The Useful Society'); he had been a member of the Bergen Town Council for nearly a generation; and he followed the fortunes of all these institutions through the daily press. In the midst of his spirit-jars, specimens, and instruments, he would foam with rage or sparkle with delight when any of his dearest interests were attacked or came off victorious.

And when, at home, in his little dining-room in the Lungegaard Hospital, he would crack a bottle from his well-stocked cellar, amid a circle of fellow-scientists, artists, townsmen, and specially, and by preference, young workers of all kinds, it seemed as if the joy of life, the instinctive rejoicing in mere existence, was personified in the ardour of that face, in the sparkle of those eyes, which had, nevertheless, seen death take from him all that was dearest to his heart. His only son, a medical student, died in 1868, at the age of twenty-five. Soon after (in 1869 and 1873) he lost his three daughters. His wife died in 1875; so that he was quite alone in the world when Nansen first came to know him.

Once more Nansen had been brought into close relations with a character eminently fitted to further his development. Their letters (of which we subjoin two) bear witness to the relation between them. The first is from Dr. Danielssen to Nansen, dated January 30, 1893, that is to say, about six months before his death.

'My dear Nansen,—

. . . . . .

'It is getting on towards the time when you are to set

[1] Doubtless the theatre in Bergen, set on foot by Ole Bull, of which Ibsen and Biörnson were successively directors.

out on your great expedition. I was uneasy, I confess, as to the result of your Greenland venture; as to the issue of your Polar voyage I am entirely at ease. I have followed your exposition of the scheme with the liveliest interest, and I have sufficiently acquainted myself with the arguments which have on all sides been urged against you, to have arrived at a settled conviction that your undertaking will succeed. It is likely enough, my dear Nansen, that I may not live to join in the shout of welcome which will ring through the country when Fridtiof Nansen comes back with his comrades from the North Pole, rich in discoveries in every department of science. Therefore, I will take time by the forelock and bid you a most affectionate welcome home—a welcome which, next to Eva's [Mrs. Nansen's], will be the sincerest and the warmest of all that will greet you. If I understand aright, your route will lie through the Kara Sea to the New Siberia Islands. In this case, I presume you will look in at Bergen in passing, and I need not say that your visit will be a great pleasure to all of us, and not least to your old friend and admirer.

'Fridtiof Nansen will come back successful from the North Pole as surely as I am writing these lines—so much I dare to prophesy. Remember me kindly to your dear wife and to the Sarses;[1] and for yourself, dear Nansen, accept a warm kiss and embrace from your sincerely affectionate

D. C. DANIELSSEN.'

Shortly before leaving Norway, in 1893, Nansen sent him, from Kiöllefiord, on July 16, a greeting which ends as follows:—

'DEAR DANIELSSEN,—Much that I have to say to you I

[1] Mrs. Nansen's family.

will leave unsaid, and only thank you once more for all that you have been to me, dear fatherly friend. Fate has sundered our ways, and debarred us from working together. . . . But whether at your side or far away, you have my undivided affection and my undivided admiration. You are now in the evening of life, but it is a beautiful evening, and the day's work you have to look back upon is long and noble. I am as yet at life's high noon, and have, I hope, still something left to do in the world; but you will always stand before my eyes as a shining example. If I should grow weary or slack, the thought of your strength of will and your untiring activity will spur me on as it spurs on many and many another. A thousand good-byes until we meet again.

'Yours affectionate and faithful,

'FRIDTIOF NANSEN.'

Few things are more characteristic of Nansen than the way in which he passed from Polar bear-hunting to the work-room of the Bergen Museum. 'I have become an absolute first-class stick-in-the-mud,' he says in a letter to his father as early as October 17, 1882, 'and have really no right to my nickname of Esau.'[1] He, the athlete and sportsman *par excellence*, has to 'reassure' his father by informing him that he is a member of two gymnastic societies! He throws himself into his scientific work as passionately as if it were the most thrilling of adventures. He pursues the paltriest insect revealed by the microscope, no less impetuously than he pursued the bears over the Arctic wastes. At Christmas, on his way home to Christiania, he blows

[1] Given him by the family of Pastor Holdt, with whom he lived. Here he found a second home of which, in his letters, he speaks with the utmost warmth.

away the cobwebs by crossing the mountains in a piping snowstorm—the whole upland reeking with snow-swirls, so that even his dog whines and trembles under the lashing of the wind. But in January we find him nailed to his post beside the new 35*l.* microscope with which his father has presented him—the father who is so frugal an economist, but who seems to set no bounds to his liberality when his son's future is at stake. He peers and peers into his microscope, and 'the world might tumble to pieces without his noticing it.' Now and again, when he feels he needs freshening up, he sets off for a walk in the mountains, enjoying the sunset by the sea, and making a great glissade from the mountain-top right into the valley, without even snow-shoes, 'going it as though king and country were at stake, with Flink [his dog] scampering after him so fast that he hasn't even time for a single bark.' On the whole, however, these rain-swept mountains of the west coast cannot have been much to his taste. 'One day we have a cold snap with snow, and all the mountains, in full winter dress, lie gleaming in brilliant sunshine; the next day they are brown and black again, frowning in mist and rain. Then, on the heels of this, come sunshine and clear skies, and the mountains are smiling once more as though in the loveliest spring weather. Now a warm southerly gale has come on—last night it blew a regular hurricane; the fields are quite brown, and there is no snow to be seen except a speck here and there on the very crests of the range.' But it needs more than the lack of his accustomed winter sports to depress a happy nature such as his, early devoted to the principle that in order to attain the essential it is often necessary to dispense entirely with the non-essential.

'His eyes are fixed on the future; he is still on the threshold of life.'

'Ungdomsmod,
ungdomsmod,
gaar som rovfugl i det blaa,
det maa jage, det maa slaa,
det maa alle varder naa.'[1]

His cry is 'Forwards!'

Far more imperative longings come knocking at his study door without his yielding to them. It was on an autumn evening of that same year that the project of the journey to Greenland took root in his mind. 'I was sitting and listening indifferently,' he says,[2] 'as the day's paper was being read. Suddenly my attention was roused by a telegram stating that Nordenskiöld had come back safe from his expedition to the interior of Greenland, and that he had found no oasis but only endless snowfields, on which his Lapps were said to have covered, on their snow-shoes, an extraordinary distance in an astonishingly short time. The idea instantly flashed upon me of an expedition crossing Greenland on snow-shoes from coast to coast. Here was the plan in the same form in which it was afterwards laid before the public and eventually carried out.'

Four years and a half elapsed before the scheme was put into execution. He writes to his father on October 4, 1883, very soon after the news about Nordenskiöld came to his ears:[3] 'I feel a sneaking longing to break loose every time I hear of such adventures[4]—a longing for further ex-

[1] 'Youthful courage sweeps like a bird of prey through the blue; it must chase and strike its prey; it must soar to the loftiest beacons.'—*Biörnson.*

[2] *The First Crossing of Greenland*, p. 2.

[3] Nordenskiöld arrived at Thurso on September 20, and at Gothenburg September 27.

[4] Alluding to a shooting expedition of his brother's.

periences, for travel—and such thoughts bring a restlessness which is oftentimes hard to subdue, and troubles me a good deal before it finally calms down. However, the best remedy for it is work, and I apply it, as a rule, with good results.'

About this time, too, another call reached him from the outer world. An English zoologist, who had visited the Museum in the summer and seen a good deal of Nansen, inquired if he would like to accept a post in America. Professor Marsh, the celebrated palæontologist, one of the most eminent men of science in America, had expressed his intention of recruiting his staff of young investigators, and the Englishman had thereupon spoken of Nansen as one whom he believed to be specially fitted for such work. Nansen answered that he must have certain assurances from Marsh before he could enter into negotiations. 'What I want specially to stipulate for, and to have quite clearly understood, is that I shall have sufficient time for independent work and study.' The provisional inquiry was made in October 1883. From Marsh himself nothing had been heard when Nansen wrote as above to his father on December 28, and no further mention of the affair occurs in their correspondence. There must, however, have been something attractive in the idea. He would have had a chance of seeing the world, and probably of making yearly excursions to the Rocky Mountains and the West. But it was not easy to leave the Museum. 'I have much to do here that I want to get finished and out of hand.' This, no doubt, was what kept Greenland also in the background of his fermenting mind. Nansen was in reality far too clear-headed not to know that the Greenland scheme

was a matter of life and death.[1] He wanted to show the world that it was no insignificant life that was to be staked upon it; he wanted to leave behind a sufficient record of scientific work, before taking the leap into the unknown; and he probably hesitated, too, at the thought of inflicting on his old father so great an anxiety. The correspondence between these two, from the autumn of 1882 to March 1885, is characteristic in the highest degree. It is the busy beginning of the day for the young man, for the old one it is almost the end.[2]

The mere sight of the Bergen postmark is a consolation to the father in his loneliness. The son begins every second letter with an apology for not having written. But these letters of his, though often empty to the point of childishness (all letter-writing being a task and a drudgery to him), will sometimes, all of a sudden, become strangely warm and expansive, when, in the press of work, he has time to bethink himself. Then he sends his father books, and discusses literature with him. It is quite touching to find the father writing, a couple of months before his death: 'I have not been able to enjoy Pasteur to the full, since I have never read a word of chemistry, and have therefore had to apply for aid to a dictionary of foreign terms, and an encyclopædia. I trust that when you come home again you will give me a little course of chemistry, to enable me to read this book with more understanding. In the meantime, it pleases me to see such an indomitable man of science constantly working towards a goal which, from all indica-

[1] His brother wrote to him, when the preliminaries of the expedition were being arranged, expressing a wish to join it. He received no answer to this letter; but to others Fridtiof remarked, 'There's no good risking more than one of the two Nansens that are left.'

[2] The father died April 2, 1885, while his son was on his way to him.

tions, he conceives to be the right one, and thereby steadily advancing the boundaries of knowledge. . . . When I get a letter from you I often shed tears, not of sorrow but of subdued joy. May God bless your work, and guide it to happy issues!'

In the son's letters, artless though they be, thoughts as well as feelings find ready enough expression when it comes to the point. One is reminded every now and then of school compositions, so amazing is their naïveté. On one occasion Nansen wins at a bazaar a little picture of a waterfall, by an obscure painter, and thereupon bursts forth: 'Now, really, isn't it wonderful what good luck some people have in everything? How Fortune has smiled on me from every quarter up to now!' But one has only to ask this child's advice on a matter of importance, or touch upon any question concerning his future, and at once the grown man takes his place, alert and decided, ready with well-considered argument, and full of healthy self-confidence.

A valuable contribution to our knowledge of Fridtiof Nansen's character at this time reaches us in the shape of certain observations jotted down by his friend Dr. Lorents Grieg, who saw a great deal of him in Bergen. 'I admired,' writes Grieg, 'the consistency with which he always acted up to his convictions, and his remoteness from any spirit of compromise. It never occurred to him to take society and circumstances into account as factors to be considered and reckoned with. When once an idea took hold of him, he followed it up unshrinkingly to its ultimate consequences.

'Contradiction was wasted on him; with kindness you could get him to do anything. The reason why his intimates were so devoted to him was that, though he was sometimes

inconsiderate and stiffnecked enough, at other times one could not but recognise in him an exceedingly delicate and affectionate disposition, which, when it happened to come uppermost, would often express itself in exceptionally engaging and characteristic ways, showing a nature of real depth. The child was always strong in him. How often have I said to myself, 'What a child he is!' I remember how, in the Christmas holidays, we would often sit in the drawing-room at home with the biscuit-box between us, fighting for what was left, while we listened to my sister singing. Then the best and warmest side of his nature came out, and never was he more lovable. He would sit listening by the hour, with an expression of the deepest seriousness, entering with understanding and sympathy into the tenderest and most pensive sentiments. When the song ended, he would at once begin fantasticating in the mood suggested either by the words or the melody, and then there was no stopping him. Schumann and Schubert, with their vehemence of passion, interested him; but he was never thoroughly satisfied until we got on to our own poets and composers. It was quite surprising to find such a capacity for deep and sensitive feeling in this youth, who at the next moment would show such grit and determination. What we others at that time of life would blush to say or quote, for fear of appearing sentimental, he would come out with frankly and serenely, without the least self-consciousness in voice or manner—in a word, he loved music and poetry. First he would recite a couple of lines, and then another couple—simply, and with feeling. "Now he will stop," I would think; "he probably doesn't know any more." But no! he would go ahead without pause, especially if he got upon Ibsen's "Paa Vidderne" ("On the Heights"),

which he knew from beginning to end, or "Ingeborg's Lament," or any other passage from "Fridtiof's Saga." Curiously enough, nothing (that I can recollect) filled him with more radiant delight than an opportunity of reciting the dialogue between Fridtiof and Björn. He would go into fits of laughter over this passage:—

> Ah! Fridtiof, thy folly seems strange to my mind:
> What! sorrow and sigh for a false woman's love!
> In sooth, upon earth there are women enough!
> For the one thou hast lost thou a thousand mays't find.
> If thou wilt, e'en a loading of that kind of ware
> Shall swiftly from Southland so glowing be brought,
> As ruddy as rosebuds, like lambs tame and fair;
> We'll divide them as brothers, or share them by lot.[1]

'Often in reading or recalling this canto, I have seemed to see Nansen and Sverdrup before my mind's eye.

'Rarely,' his friend concludes, 'does one find in a man of that age so pronounced a love and yearning for what is good, right, and pure, and rarely, too, such a dauntless energy in following it up to its remotest consequences. The search for the right, whether in great things or in small, was in his case accompanied by constant unrest, yearning, and struggle; and to carry it through to the end, in spite of everything and everybody, was his greatest joy.'

Fridtiof Nansen's idea of paradise at this period is not that of the Mohammedan, a blessed *dolce far niente*, surrounded by beautiful women. His literature is *En Hanske* ('A Gauntlet') and *Sigurd Slembe*.[2] His ideal of the world beyond is founded on the Jotunheim, with its rugged and ragged peaks, and glaciers on every hand. When this titanic Nature outlines her noble contours against the deep,

[1] E. Tegnér, *Fridtiofs Saga*, translated by the Rev. W. L. Blackley.
[2] Both plays by Biörnson.

dark sky, it seems to him like a glimpse of the lost paradise.[1]

And in his holiday hours he throws himself into the midst of this wild beauty—straightens his back after bending over the microscope—and attacks the mountain fastnesses with dare-devil glee.

One evening towards the end of January 1884 he is walking through the streets of Bergen in pouring rain and howling wind, wondering if the sun is going to shine again this side of Easter. He says, like Peer Gynt:

'One must spit and trust to the force of habit.'

He looks in at the post-office and gets his *Idrætsblad* ('Journal of Athletics'), comes home and sits in his arm-chair, intending to glance through the paper before going at his work again. He reads 'Snow-shoe-Races on Huseby Hill, February 4.' All of a sudden the pine-forest rises before his mind's eye, alluringly white, and villages and meadows, uplands and mountains, lie bright and gleaming in the sunshine. It is a ringing frost. Your breath floats visibly against your cheeks and whitens your hair with rime. He feels the loop of the snow-shoe pressing his foot, the blood tingling through his veins, and the wind whistling past his ears as he tears along. He looks at the papers: the forecast indicates a general thaw. Nevertheless, early on Monday morning, while the rain lashes against the windows of the railway-carriage, there he sits with his snow-shoes, and a formal leave of absence from the Museum in his pocket, on his way to Voss. 'Madness,' his friends exclaim. 'I'm going on snow-shoes,' says Nansen.[2]

[1] From a description of a tour in the Jotunheim, in a letter to his father.

[2] He has given an acount of this journey in *Aftenposten*, March 1884.

And soon he is in the heart of the mighty mountains, with a blue winter sky overhead. He sets off over Stalheimskleven, following its endless zigzags, now skirting the edge of one precipice, now veering across to the other. 'About midway, the image of a peasant, with amazement in his face, flashed past me like lightning; the man had crept close in under the cliff in sheer consternation.'

Here he is in Nærödal, where the avalanches come crashing down, as thunder and lightning do in other places. In the bottom of the valley, if local tradition may be credited, the force of the air-current has been known to carry people from one side of the fjord to the other. Here, at Gudvangen, lies a great stone which came leaping from the very crest of the mountain, and went like a cannon-ball through both walls of the first house in its path, and then through roof and wall of the next, killing one old woman and crippling another.

The evil reputation of the place does not make him nervous or even cautious. In the heart of Lærdal he sits down by the wayside and eats his breakfast. The road skirts the ravine through which, far below, the Lærdal river foams—on the other side the mountain rises sheer, and culminates in great dome-like summits. Behind him, the hillside is rugged and abrupt, a fissure seams it from top to bottom, and its slopes are almost precipitous. The débris of a great avalanche lies all around. Nansen sits listening to the roar of the cataract, and thinking of the summer, when, fishing-rod in hand, he would saunter through the river-gorge—there are many splendid pools here for a fly. Suddenly he is roused by a whining voice: 'You're sitting right in the track of the avalanche! And you've picked out the worst possible place, too!' 'Oh,

I should hear it coming,' says Nansen. 'It comes like a rifle-shot, that's how it comes.' And the man hastens by.

Nansen goes on with his breakfast. Then another man appears, driving at top speed. 'This is no place for any one who values his life!'—and he's gone in a flash.

But to Nansen, for the moment, his breakfast seems more than his life; he finishes eating before he moves. Then he crams what is left into his wallet, and prepares for a start. He hears afterwards that the fissure is called Sauekilen, and that it is the worst place in the whole of Lærdal. Here the avalanches choke up the whole breadth of the valley; the one that has already fallen is only the vanguard to clear the way for the others, which may be expected at any moment.

He takes a sketch of the remarkable place, and gets his snow-shoes on again. Below him flows the river, thickly flecked with ice; the otter lives in the dark bubbling holes among its rocks, and down by the cataract the water-ousel twitters.

It is night when he comes to cross the summit of the pass; the sky is full of stars, sparkling with unusual clearness, and shedding an uncertain light over the high plateau. 'Nature all about was vast and silent, there was no sound to be heard except my own footsteps in the snow. It gives one a singular sensation thus to wander quite alone over mountain wastes in the clear and starry night, far from all human habitations, and high above the life of men. One feels here that one stands alone, face to face with Nature and God. It is useless to try to creep into hiding; no, a man must stand forth as he is; there is no shelter to be found on the naked upland.'

At last the windows of Breistölen shine out into the

night, and he reaches shelter. 'Lord in heaven! are there people out on the mountain so late as this? Ah, it's you, is it? You're always a late bird, you are!'

But it is on the way back to Bergen that he takes his life in his hands time after time. First of all at the very top of the pass, where the way leads through narrow mountain clefts with precipices above and below. The river, in the bottom of the ravine, rushes madly down towards the lower valley. The surface of the road is rounded and exceedingly slippery. 'I had to carry the sledge more than it carried me.' When the road is better for a bit, he falls into a brown study. 'I wonder if it was this way King Sverre came from Voss.' Whereupon the sledge sheers off towards the precipice and jolts against a stone, and the post-boy behind is almost jerked off into the river. With one hand he grips the boy's collar, with the other he gives the sledge a tug, and both are on even keel again.

He passes the night at Gudbrandsgaren, the highest farm in the district, in the direction of Sogn and Voss. Wall and roof are black with age and smoke; Nansen is delighted with the place. When the kindly people shake hands with him and say good-bye, at three o'clock in the morning, they beg him to go cautiously over the mountain. He has told them that he means to cross Hallingskei and Vosse-skavlen to Voss, and they have warned him that it's not a thing to be attempted on a winter's day, and that there isn't a man in the district who would dare to go with him over the mountain—unless, perhaps, the man at Myrstölen, who is always tramping the uplands after ptarmigan and reindeer. So Nansen determines to make first for Myrstölen. He must remember, say the people at Gudbrandsgaren, that, young and

active though he may be, many a good man before him has met his end upon the hills.

Off he sets by moonlight; through the woods, between the straight tree-trunks, across open levels, over the crackling snow. Then the way is overshadowed again, with thick underwood on both sides; he slips and falls on his face in the snow. But little by little the valley begins to widen out, all trees and bushes disappear, the plateau billows out before him—snow, snow, nothing but white sparkling snow. He draws near Myrstölen; the day announces her coming over the mountain range in the east, with her deepest, darkest, flame-red hues, growing ever more and more intense. Soon it seems as if the whole world beneath the horizon were on fire, and its flames reflected on the sky.

The man at Myrstölen is not at home, he is away on the other side of the lake with his herd of reindeer; they are in the midst of marking them. The women are terrified when they hear what route Nansen proposes to take. One of them is a bright young girl; he asks her for a box of matches. Yes, he shall have it, 'but on condition you promise not to attempt the big mountain.'

He promises to be careful; but he might have added in the words of the peasant who was about to take the pledge: 'To promise is easy enough; it's keeping it that beats me.'

Presently he stands at the parting of the ways—is it to be Aurland or Vosseskavlen? Before him stretches a great plain, with no mountains beyond it, but a steady descent right to Sogn. It would be a quick run down there.

He turns. There lies the lofty plateau gleaming, with peak on peak beyond it, like the tents of a camp, standing out greenish-white and clear against the horizon. It is not to be resisted. He has been here before, in fog, rain and sleet,

so he can surely make his way now, in fine weather, with the snow in splendid condition. If he fails to get across the mountains to-day, why then he can pass the night at Hallingskei Sæter or Gröndal Sæter; and, if the worst comes to the worst, the dry, soft snow will make a cosier bed than a hard slab of stone, of an autumn night, when one was wet to the skin.

He chooses the upland—the way of the reindeer. The fresh tracks of a large flock are to be seen in the snow. The surface is excellent; he has the wind behind him, and his snow-shoes scarcely leave a mark as he goes. More tracks, first of wolves, and a little later of lynx and wolverine—they are after the reindeer.

He makes for the Hallingskei Sæters and Gröndal Lake with its sæter. Here he means to turn off and ascend to the crest of the range. Tarn after tarn he passes, but never a sæter is to be seen; so none of these can be Gröndal Lake. When he last saw the place, it was raining, and all the mountains around were bare; only Vosseskavlen heaved its mighty white crest in the south and disappeared into the fog. Now everything is white—the lakes, the mountain sides, and the surrounding peaks; it does not occur to him that one of them may be the ridge he wants. It is the sæters, the sæters he is after; but they seem to be bewitched. In his impatience, he cuts straight across the windings of the valley, over a long lake, and upon the other side—when lo! he finds himself on the brink of a precipice. He stands on a hollow comb of snow, overhanging a dizzy chasm; below, the river rushes through a narrow gorge, and on both sides the descent to it is precipitous. Has he ever been here before? He cannot remember; but no doubt it is all right, and he must just follow the river. He finds a way down

to it, so steep that he has to hold his staff in the one hand and his snow-shoes in the other, and stick them deep into the snow. Finally, he gets down to the level of the river; but the banks above the waterfalls are so steep that he is every moment in danger of plunging headlong into the black foaming water. Whenever his footing fails, he sticks his staff in up to the handle and hangs on to it. Presently he comes to another rock-wall which he must clamber up. He creeps up step by step. At the top there is an overhanging comb of snow. He has to drive in his staff as far from the edge as he can reach, and plant his snow-shoes by the side of it; the snow is fortunately hard, so that he can get a good purchase. In this way he hauls himself up over the edge, and then his dog after him. Then on again—another lake—another ravine, worse than the first—and still another lake. He must have lost his way. At the end of the lake is a large wood, and farther on, and much lower down, a narrow valley with birch trees on both sides. He sees clearly that he must have strayed in the direction of Sogn, and is no doubt not far from Kaardal. But it is Vosseskavlen he has made up his mind to cross; so right about face, and over the ravines again! Since he has come down that way, he can of course go back; and, sure enough, he manages it, although it is dark by the time he crawls up the last cliff. The snow is hard—underneath, the cataract thunders, and above a mighty snow-comb tops the ridge. 'It was all I could do to reach the edge of it, and plunge my staff and snow-shoes well into the snow. For a moment I hovered over the abyss, then got my knee well planted on the edge, hauled myself up with all possible despatch, and stood safe and sound on the top.'

By this time it is pitch dark; the shining myriads

of stars shed only a faint glimmer over the snow-waste. Snow upon snow—lake after lake—but no sæter! The place must be bewitched. So far as he can make out his watch by the starlight, it is half-past nine—bedtime, and none too soon, certainly, for one who had been afoot since three in the morning. But a sharp, penetrating wind is blowing, and some sort of shelter must be found. The wind has heaped up a high hard drift against a huge stone. He creeps in between the comb of the snow and the stone, hollows out a bed, puts on a woollen jersey, the only stitch of extra clothing he has brought, and, with the dog curled up by his side, its head tucked under his arm, and his knapsack for pillow, he falls asleep.

When he wakes and peers out of his lair, the moon is shining over the plain of snow. It is three o'clock, so he puts on his snow-shoes. Each mountain peak stands forth in peaceful solitude and looks out over the plateau. If only one could see what *they* see!

It is clear that in the darkness he must have stumbled upon a side valley. He retraces his steps; but no Gröndal sæter can he find. He enters a new valley, but sees that here again he is on the wrong track. There is nothing for it but to make for the top of the nearest peak, in order to get an unobstructed view over the plateau. And there he sees a sight! 'If a man were going to sacrifice his life for a spectacle, it could be for none other than this.' Before him and on all sides stretches the plateau, like a frozen sea of white foam-waves, billowing into ridges and valleys, calming down again to great plains, and then towering aloft into sharp peaks and pinnacles, one after the other, as far as eye can reach towards the horizon, where it is lost in a hazy shimmer. And over the whole rolling ocean the moon sheds

her mild and peaceful radiance, glancing and gleaming on the ice-crests, sparkling on the snow, while the valleys are plunged in dark and sinister shadows.

Due east, not far off, Hallingskarven rears its arched and mighty bulk; far to the south, the Hardanger glacier, with its sharp outlines, glitters and shines; and in the west, a mountain stands forth abruptly against the sky—it must be Vosseskavlen. Directly at his feet the ground shelves down into the darkness, and overhead the dome of heaven soars blue and clear, the glory of the moon almost eclipsing the countless host of stars.

But the moonlight is deceptive. It would be wisest to wait till dawn. Again he dug a bed in the snow and went to sleep. A couple of hours later, when he awoke, the first flush of the dawn was illumining the peaks. Now he saw plainly—to be sure it was Vosseskavlen. But he must wait till the sunrise, he must see that from here. At last a single bright beam comes shooting through space, glances across the plateau, and kisses the peaks. Then a whole flood of rays bursts forth, steeping everything in its glow of colour. The peaks seem to shoot up as they redden, the snow-crests blush and shimmer, the valleys remain plunged in their chill shadows. To see a sight like this is indeed to hold communion with Nature, to feel the touch of higher powers, to be lifted towards worlds undreamt of; it is to obtain a glimpse of eternity.[1]

He strikes upwards towards Vosseskavlen. There are dangers enough and pitfalls enough, but on he goes. When he is almost at the top of the range, he feels he deserves a

[1] Nansen's own account of this journey has been followed closely, and even verbally, though of course with considerable curtailment.

reward for his labour, and he eats his last orange. It is quite frozen, and as hard as a cocoanut. But so much the better—it is a fruit ice.

Thus did he conquer Vosseskavlen. He had achieved one of the most perilous mountaineering feats on record since the days of King Sverre. Had he not been an athlete of the first rank, and especially had he not possessed the genius and sure instinct of bravery, he would have laid his bones up there under the snow-combs, and would never have reached any other 'inland ice.'

Yet it is in reference to this tour that Nansen writes to his father, grumbling because people call it foolhardy. Either *he* must be stupid, or else other people must be tremendously wise; why should this little adventure be represented as so terrible a breach of the so-called rules and regulations of common prudence? Why, he would like to know, should he be supposed to be so much more tired of his life than other people?

No, he was certainly not tired of life; on the contrary, he set the highest value on it. The farther he advanced in his studies and observations, the more his self-confidence increased.

On March 29, 1885, he writes to his father one of the last letters he was ever to send him—a letter warmly inspired by filial feeling, and yet full of the sense of personal power. It appears that he has had thoughts of leaving the Museum, and that the economic outlook causes him no anxiety. He has, in fact, various sources of income in reserve. 'I am quite prepared, at a pinch, to put up with the very plainest living, particularly for the sake of my scientific studies, which are my delight, and for which I

would willingly sacrifice all the other so-called necessaries of life.' Does not the assistant at the Museum live on something like 55*l.* a year, with his wife and family, of whom several are now grown up? 'To require little is a better capital than to earn much. The need to earn much fetters and enslaves a man, while the ability to do with little makes him free. He who needs little will more easily strive towards the goal he has in view, and will in general lead a fuller, richer life than he who has many wants.' He is thinking of travelling to prosecute his studies, and he also mentions the American scheme. 'I think that, when the opportunity presents itself, there is nothing so conducive to development as travel, seeing other parts of the world and the civilisation of other races, beyond the bounds of this tiresome Europe.'

For the present, however, no new departure is made. On the very same morning on which he despatched this letter, Danielssen made him the most accommodating offers of leave of absence. He can make what arrangements he pleases for his journey, and start when he pleases. Nansen determines to see the summer through at all events; but he 'thinks he'll accept.' As is well known, he continued to be associated with Bergen for several years more. Not until his return from the Greenland expedition was the tie really broken. It is clear that the indefatigable Danielssen endeavoured to the very last to attach this coming man to the Institution for whose service he thought the very best talents none too good. The correspondence between the two proves this. On the other hand, we cannot tell whether he exercised any influence with reference to the negotiations which appear to have been going on in the beginning of

1887 between Nansen and Professor David Starr Jordan, then of the University of Bloomington, Indiana.

Early in January 1887 Professor Jordan enquired of Professor Collett whether he or Professor Sars happened to have among his students a man who would like to try his luck in America. The idea was that such a person might begin with a thousand dollars a year, and that both salary and duties should increase with each year. He mentioned Nansen's name. Upon Collett's communicating this to Nansen, he replied that he was much tempted, but that he foresaw difficulties. He wrote personally to Professor Jordan, to whom Collett had warmly recommended him. Since the correspondence led to no result, we may conclude either that the difficulties proved insuperable, or that the scheme of the Greenland expedition had in the meantime thrust itself into the foreground and blocked the way.

Nansen's scientific work at the Bergen Museum will be dealt with later on by a writer who can treat the subject with authority. In the meantime we must pause to relate a brief, but important episode in the life of the young zoologist. Its scene is neither the Greenland ice-fields, nor Indiana, nor 'west of the Rocky Mountains.' It is, as a matter of fact, still within the bounds of 'tiresome Europe,' though certainly one of the most endurable spots on this hemisphere—to wit, Naples.

CHAPTER VI

IN NAPLES

In the course of his studies of the nervous system, Nansen became acquainted with the chromic silver method of staining the nerve fibres invented by Professor Golgi of Pavia.[1]

In order thoroughly to familiarise himself with this important auxiliary to the investigations which had now occupied him for several years, he determined, in the spring of 1886, to go to Italy. Partly under Golgi's personal guidance, and partly at the Zoological Station in Naples, where he would find ample material, he hoped to be able to carry his researches somewhat further than had been possible with the methods hitherto in vogue. The previous year, at the Bergen Museum, he had won the Joachim Friele gold medal for his work on the myzostoma. He had taken the medal in copper, and applied the value of the gold to his travelling expenses.

After a short stay in Pavia, where he conferred with Professor Golgi and Dr. Fusari, he went on to Naples, where he spent the following months, from April till June 1886, at the celebrated Zoological Station.

Along that beautiful curve of the sea, the Spiaggia di Chiaja, between the old fort, Castel dell' Ovo, and La Mergellina, stretches a magnificent promenade, the Via

[1] See the following chapter.

Caracciolo. This is the Corso of the Neapolitans; but unlike the Roman Corso, which is a cramped, narrow, perfectly straight street, between gloomy old palaces, the Via Caracciolo is a gracefully curving, broad and open esplanade, affording a continuous view over the blue sea, with Capri visible in the south and Cape Posilippo in the west.

Bordering on this unique promenade, crowded every evening during the season with handsome equipages and well-appointed horsemen, lies the park of Naples, the marvellously beautiful 'Villa Nazionale,' with its avenues of acacia and ilex, its swaying palms, and, scattered amongst the bosky thickets, a host of white marble statues—no mere tiresome reproductions in stone of politicians and generals, but copies of the famous masterpieces of antiquity.

In the midst of this noble and beautiful park, where one wanders about in a day-dream, wishing the clock of time could be put back a couple of thousand years or so, lies one of the most modern and go-ahead of scientific institutions—the famous Zoological Station: the 'aquario' as the Neapolitans call it. Among the luxuriant verdure of the park vegetation, the two stately white buildings shine forth, with their simple and noble outlines, visible for a great distance around, and dominating the scene, as befits a temple of science.

The story of how it came there—this creation of a single man's inspired thought and indomitable energy—reads almost like a fairy tale.

In the year 1870, Dr. Anton Dohrn, a young *privat-docent* from Jena, thirty years of age, betook himself to Naples with the object of calling into existence a new auxiliary to biological study, through the establishment of a

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Zoological Station on the shores of the Mediterranean, whose animal life surpasses that of all other known seas in wealth and variety. Every educated man now knows, in a general way at all events, what a Zoological Station is. At that time no one had heard of such a thing; for the idea was absolutely new and was evolved by Dohrn himself.

Before Dohrn's time, zoologists in general were compelled to study the fauna of the ocean, which includes the richest variety of organisms, solely by means of dead specimens preserved in spirit, for the most part curled up and squeezed together, transformed in many respects at the very moment of death, and often, too, badly enough cared for in the museums. Only a very few had any opportunity of studying the living organisms in the sea itself.

To create a new institution for the advancement of science, where investigators should be enabled to study 'from the life' the fauna of the sea in all its forms, and to follow with a minuteness hitherto undreamt of the vital processes, the development, the propagation, etc., of the particular organisms—such was the great goal Dohrn proposed to himself. 'As a somnambulist sometimes passes safely by the precipices on both sides of his path,' so Dohrn went straight to his goal. He sought out the most beautiful spot on earth, the 'Villa Nazionale' of Naples, and in 1870 applied to the municipality for an adequate site for a 'Zoological Station,' he himself offering to furnish the necessary means.

After encountering many difficulties, his request, strangely enough, was granted. The building was begun. With immovable confidence in the triumph of his idea, he sank his entire fortune in it. When the building, however, was still far from complete, it turned out, as it so often

does, that the money was insufficient. Dohrn hurries off to Berlin and applies to the German Government for a subvention. The minister, Dr. Delbrück, at first refuses his application, but promises—after a brilliant scene with the young *privatdocent*—that if Dohrn can procure the recommendation of the Academy, the government will consider the matter.

Never doubting that this recommendation will be easily obtained, Dohrn returns to Naples; it is only a question now of getting the building roofed in before the beginning of the rainy season. What happens? The architect, with whom he had fallen out, had during Dohrn's absence brought to the notice of the municipality a departure from the original plan—a departure for which he himself was responsible—and, under the influence of a sudden gust of hostility towards the foreigner who wanted to build a palace in the midst of their beautiful park, the authorities forbade the continuation of the work. There certainly must be something or other behind all this, thought the Neapolitans; it was not to be believed that any one should throw his money out of the windows, as Dohrn had done, in the mere ardour of scientific enthusiasm.

With some difficulty, Dohrn obtained permission to roof the building; but four weeks later orders came from the municipality to stop all work. Dohrn did everything in his power, without avail. Whilst all this was going on, he received, on Christmas Eve, 1873, a letter from Du Bois-Reymond in Berlin, to the effect that the Academy, too, had refused its recommendation, and that thus the prospect of a contribution from the German Government towards the completion of the building had come to nothing.

Most men, under these dismal circumstances, would

certainly have looked upon the matter as hopeless. Not so Dohrn. He followed Du Bois-Reymond's advice, summoned up all his energy, and set off for Berlin that very evening. 'I have known pleasanter Christmas Eves than that one,' he remarks in his interesting account of his experiences—and one can well imagine it. In Berlin he hoped to win over the members of the Academy by his personal influence; and that he succeeded in doing. Thus the government contribution to the building-fund was secured. This, however, was not sufficient; in Naples, matters were in such a bad way that his only hope lay in diplomatic influence; and he succeeded in interesting the Prince Imperial of Germany in the affair. Shortly after, when the question of the building once more came up for consideration in the Town Council of Naples, Dohrn had, by his energy, succeeded in placing his plans in so favourable a light, that his supporters carried the day, and permission to go on with the building was accorded him. When finally, after five years of toil and struggle, the Naples Zoological Station was inaugurated, it might truly be said that here was a new laboratory for scientific research, whose influence would make itself felt through all time.

The Zoological Station, with its celebrated aquarium, is now the first in the world, and one of the sights of Naples which no traveller omits to visit. But in the upper stories, above the public hall, students of every nationality have their own aquariums, their own places for study, equipped with every conceivable modern appliance. The results of their researches have gone forth in an imposing series of publications; and still more important is the indirect influence which the Station has exercised upon biological studies in all countries.

Dohrn's inspired idea, as he himself predicted from the outset, has found numberless imitators. He prophesied that 'in one or at most two decades, the earth would be completely enveloped in a network of Zoological Stations.' At that time this prophecy was looked upon as fantastic, and contributed not a little to the difficulties which beset him. As a matter of fact, there are at this moment scattered about the world at least fifty such biological stations, on the shores of nearly every sea; but the one at Naples is still beyond comparison not only the most famous, but also the largest, best equipped, and most important of them all.

A prolonged visit to a scientific laboratory of this description could not fail to exercise a most beneficial influence upon Nansen's development—not only directly, through the admirable facilities here offered him for carrying on his special studies of the nervous system, but perhaps even more in another way.

Dohrn himself, during Nansen's stay in Naples, had come to the very end even of his remarkable energy. His two eldest sons were dangerously ill, and his wife's strength was terribly overtaxed by their illness. Nevertheless, the daily routine went on uninterrupted, and continual contact with a personality so strongly marked as that of Dohrn undoubtedly left its impress. In a little article by Nansen which appeared in *Naturen* (1887) after his return, describing the Zoological Station, his enthusiasm for Dohrn's life-work shines forth from every line, as well as his admiration for just that quality of irresistible energy which had achieved so great a result. We quote this brief description of the arrangements at the Station:

'The whole basement of the great building is fitted

up as an aquarium for the general public; an aquarium which it would certainly be difficult to rival. This great room, with its many tanks, is soberly decorated, with a complete avoidance of all humbug[1] or fantastic ornament, which would only serve to distract the attention from its essential purposes. It has a great attraction not only for the ordinary traveller, but for the scientific student as well. Down here he is able to pass hours in communion with Nature, and face to face with the rarest of marine organisms; and in a comparatively brief time he may learn more of the life of the world than he could by long grubbing in volumes of printed wisdom, or rooting through the dead treasures of museums. He will contract the habit of using his eyes and his powers of observation upon living nature, and learn to regard life as the essential object of research.'

In this hall, with its subdued light and with all the strange animals around him—cuttlefish, starfish, snails, and radiata of all kinds, making one feel just as though one were living at the bottom of the sea—Nansen sat and gazed and thought, and did his devotions to Nature face to face with her living forms.

He thus continues his description: 'Acquaintance with the Station, for the majority of tourists, does not extend beyond this room. Far more important to science, however, are the laboratories situated in the upper stories of the building. Here naturalists from almost all European countries are at work, here they have everything they can possibly require for their studies. They can come to the Station, sit down at the work-table assigned to them, tell the Curator, Salvatore Lo Bianco, what particular animals they want, and presently the animals are brought alive to

[1] Nansen's own word.

their very tables, where they can study them at leisure, with no need to stir from their places except for meals and sleep. Instruments, smaller tanks in which to keep the animals alive, and an excellent library, are all just at hand. This concentration of appliances is the novel and important feature of the institution. . . . If the workers are tired of the laboratory, they are free to go out in the vessels belonging to the Station, and watch the gathering in of fresh specimens. Besides several fishing boats, the Station owns two small steamers. . . . These steamers and boats are equipped for dredging, trawling, net-fishing, surface-fishing, and so forth. They are also supplied with diving apparatus, so that in this way, too, you can fetch up whatever you want.'

Intensely absorbed as Nansen was in his studies, no one who knows him will need to be told that the splendid scenery of Naples and the animated life of the gay city were by no means without attractions for him. 'Er war den Freuden des Lebens nicht abhold, und war ein flotter Tänzer,' says Professor Dohrn in a letter to the present writers; and who indeed, under such circumstances, could help rejoicing in life, not merely the life of the aquariums, but the vivid, pulsating southern life at the foot of Vesuvius, in a region which has for thousands of years been famed as an earthly paradise?

In letters from his friends of these days, we find lively reminiscences of excursions, now in the moonlight to the vineyards of San Sebastiano, now over the blue billows to Capri and Sorrento.

One of these friends, a Hungarian scientist, writes to us: 'He was the life and soul of all our little festivities. Most of the students then working at the Station were in the habit of

meeting at the Café Basta on the Corso Vittorio Emmanuele; every evening at supper-time there was a little feast here, a musical gathering, light-hearted and refreshing in the highest degree. Nansen contributed greatly to the prevailing gaiety. It sometimes happened that we devotees of science became so enlivened with wine and music, that we proceeded to dance a quadrille; and on these occasions Nansen was Master of the Ceremonies.

'Once we chartered a carriage to drive to Castellamare and Sorrento by the famous coast road. On the way, another carriage with two ladies came up behind us. The ladies amused themselves by racing us and laughing at us as they shot past; whereupon Nansen sprang out of the carriage and ran by the side of the horse a long stretch of the way. Thus we overtook the ladies again, to the unbounded merriment of both parties.

'In Sorrento Nansen met some Norwegian ladies. I was very tired and went to bed; but the Norwegian ladies wanted to get up a dance, and as there was a scarcity of partners, my presence was required. Nansen declined to give me a moment's peace till I got up and dressed myself. Then he dragged me into the drawing-room, where we were greeted with loud applause by the ladies, who were quite alive to the situation.

'At other times he would be quiet and absorbed, and would sit by the hour without uttering a word. I have seen him at the foot of Vesuvius, among the ruins of San Sebastiano, and on the melancholy lava-wastes. San Sebastiano was devasted by the eruption of 1874; nothing was left but a church. I have seen him sitting on a block of lava there by the church, hour after hour without stirring; he simply sat and gazed out into the distance. Time

after time we others tried to make a start, and called to him—he never moved. Afterwards, on the way home, as he and I walked together, arm in arm, I tried to make him talk, but found him absolutely mute—there was not a word to be got out of him.'

It seems as though the gladness of youth and the stern vocation of the man were struggling within him for mastery, and he doubly relishes dancing amongst the orange trees and the roses, because he dimly foresees the first hard steps across the ice-fields of Greenland. Two years later, up there in the midst of the ice, he sits outside the tent, feasting upon a few mouthfuls of biscuit with melted snow, lemon-juice, and sugar, while the moonbeams play over the boundless desolation. Then his thoughts go back to the conditions amid which he last ate 'granita,' and he recalls 'one warm summer night by the Bay of Naples, with the moonbeams playing over the dark waves of the Mediterranean.'

The Zoological Station in Naples occupies a unique position. It is, after a fashion, a kingdom in itself, with complete autonomy. It is independent, but connected by alliance with no fewer than twenty-four European states. It has become, as Nansen puts it, 'a central organ for zoology.' 'It is a kind of international scientific exchange where the various peoples meet and join hands, where research is carried on with assiduity, and where the burning scientific questions of the day are sifted and discussed in a fashion which helps in no small degree to render a stay at this Station inspiring and profitable.'

Its organisation is also in a sense international, in that it is maintained by subsidies from most of the European states, which acquire, in exchange for their annual contri-

bution, the right to one or more places for students of their respective nationalities. Thus the German Government contributes 4,000*l.* a year; the Italian Government pays 500*l* for five places (besides contributing 200*l.* to the library fund); the Austrian Government pays about 200*l.*; and so forth. The following states have rights of admission to the station: Prussia, Baden, Saxony, Bavaria, Hesse, Würtemberg, Austria-Hungary, Russia, Holland, Belgium, Italy, Spain, and Switzerland, besides the town of Hamburg, the Universities of Oxford, Cambridge, and Strasburg, and the Berlin Academy. An American millionaire is also among the contributors. The Scandinavian countries have no right of admission, so that Nansen was simply a 'guest' at the Station, through Dohrn's special courtesy. He is not the only zoologist from the northern kingdoms who has in this way enjoyed the hospitality of this great biological centre, and he certainly does not stand alone in desiring that the three Scandinavian countries might combine to furnish the required annual contribution for, at the very least, a single right of admission.

After Nansen's return home, he was naturally very desirous of making Dohrn's idea bear fruit in the establishment of a biological station on the west coast of Norway, where the marine fauna certainly presents highly interesting characteristics. His little article in *Naturen* accordingly ends with a hint in this direction. He laid before Dr. Danielssen the plan of a zoological station in Bergen, but Danielssen could not at first give his full adhesion to the scheme. Thus Nansen himself was the first man in Norway to advance formal proposals for the establishment of a biological station. The Greenland expedition, however, intervened to prevent him from prosecuting his idea in its original form.

His scheme, in so far as it related to Bergen, was afterwards taken up most energetically by Dr. J. Brunchorst; and, about the same time, Nansen, together with Professor G. A. Guldberg, Professor N. Wille, and others, took the initiative in founding yet another Norwegian biological station in Drøbak, a little way south of Christiania. This station was inaugurated in 1894; and it is needless to say that, at its opening, Nansen was justly remembered as the man who had first conceived the idea of biological stations for Norway.

Nansen's stay in Naples has thus been fertile of good results, not only through the impulse given to his own zoological work, but also through his transplantation to Norway of Dohrn's idea.

Once again we must emphasise the fact that Professor Dohrn's great life-work, and the man himself in another and more personal way, exercised an abiding influence upon Nansen. It was inevitable that the greatly inspired and splendidly successful achievement of an indomitable soul, not less than that indomitable soul itself, should make a peculiar impression upon a nature like Nansen's, and should fix itself before his mind's eye as an encouraging example of what idealism on a great scale, with resolution to support it, is able to accomplish. There is no doubt whatever that the undertaking which was to become the goal of all his energies, and upon which he was to stake his life—to wit, the solution of the Arctic enigmas—was secretly taking firm hold of his mind even in Naples, under the blue skies of the south, in the spring of 1886. It seems indubitable that 'a virtue went forth' from the association with Dohrn, however little he and those about him may have divined the true strength of Nansen's character.

CHAPTER VII

FRIDTIOF NANSEN AS A BIOLOGIST

By Gustaf Retzius.

I have accepted with pleasure the editor's invitation to sketch in brief outline Fridtiof Nansen's work in the sphere of biology—as a histologist and zoologist. Many of his own countrymen are doubtless quite as competent as I to discharge this duty; but my own labours in two different directions having led me into the same fields of study, I have had, perhaps, unusual opportunities, both through his writings and in personal intercourse, of appreciating not only his talent, but his 'sacred ardour.'

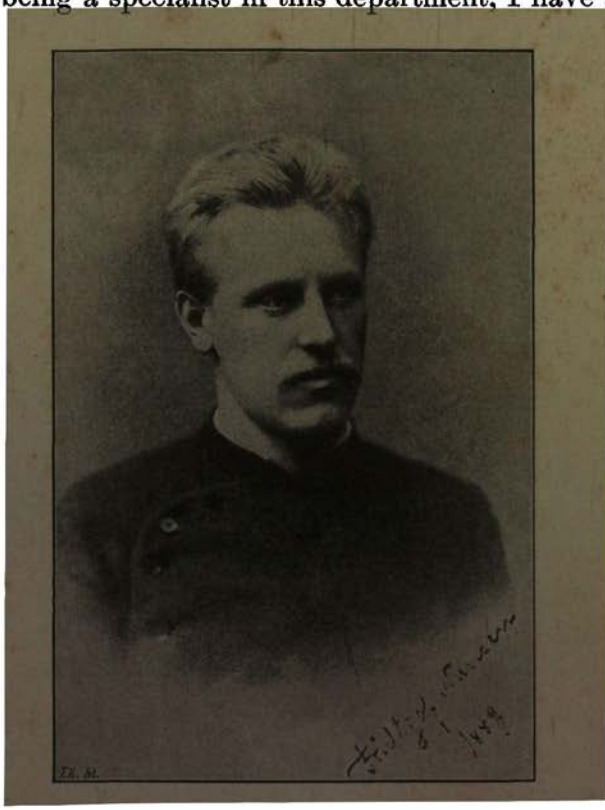
Although Nansen's actual work as a biologist has, up to the present, extended over a comparatively short space of time, he has already succeeded in doing good service in several directions.

His first work of importance appeared in 1885 under the title 'Contribution to the Anatomy and Histology of the Myzostoma,' a folio of eighty pages, illustrated with nine plates, founded on his own drawings.

The myzostoma are a small group of worms (first described in 1847 by the German zoologist, F. S. Leuckart) which live as parasites upon certain radiata (crinoidea), and which, obviously by reason of their parasitic mode of life, have undergone highly significant secondary variations. Several eminent investigators, such as Sven Lovén

(1840), Semper (1858), Graff, Metschnikoff (1866), and Beard (1884), have made a study of their structure and to some extent of their evolution as well, and endeavoured to determine from what non-parasitic species they are derived.

Not being a specialist in this department, I have applied



to Professor A. Wirén, who has been so good as to favour me with the following information.

The so-called *Schnitzerei-Teknik* (serial section cutting) had just at that time come into general use. With its aid Nansen carried out extensive investigations into the more delicate structures of the myzostoma, and succeeded in correcting and enlarging in many respects the views of his

predecessors. Whether his explanation of certain organs (as, for instance, the suckers, the foot-ganglia, the ovaries) is correct or not, further investigation must decide.[1] The work referred to, however, establishes beyond a doubt not only its author's mastery of the technical processes of the time, but also his great perseverance and originality.

The myzostoma exhibits—not outwardly, but in many important parts of its organisation—a marked resemblance to a group of worms numerously represented amongst the fauna of the sea, the chætopod annelids, of which several are external or internal parasites of other marine animals, and have therefore undergone considerable variations, especially in outward form. For the present, the myzotoma is usually regarded as a chætopod, or at least as closely related to that family, although modified by its parasitism. The theory has also been advanced that they may be related to certain spiders. Towards the confirmation of the former opinion Nansen's work appears to have indirectly contributed, especially through his description of the throat-nerves which he discovered. Nansen himself, however, puts forward, with every reservation, the hypothesis that they may be derived from a species related both to the annelids and to the spiders.

In the 'Annual Report of the Bergen Museum for 1886,' which appeared in 1887, we find a new and important work by Nansen.

While he had concentrated his investigations upon a special system of organs, he had at the same time extended them over a considerable portion of the animal kingdom. With all his youthful energy, he had thrown himself into the

[1] That Nansen was mistaken as regards the ovaries, has, I think, been conclusively established.—A. WIRÉN.

examination of the finer structure of the central nervous system; and he now devoted himself not only to the study of worms, but also to that of crustaceans and molluscs, and even took into his ken the lowest vertebrates—the lancelet fish (amphioxus) and the 'hag' (myxine).

At this time chaos still reigned in that great and obscure department. It is true that various investigators had endeavoured to solve the intricate problems it presented, and neither expositions nor theories were lacking in regard to the nerve elements, ganglion-cells, and nerve-fibres, their courses and inter-relations. It was especially with the aid of the *Schnitzerei* and staining processes that endeavours were made to clear up the subject, and Nansen, among the rest, laboured perseveringly at these methods. But he soon found that they alone would not lead to the desired goal, and therefore cast about for new ideas and new devices. An Italian histologist—Golgi, of Pavia—had several years before invented the method of treating the nerve tissues with chromic acid, and afterwards with a solution of caustic, in order to stain the nerve-cells and their offshoots black, so that their form, situation, and course should stand out clearly defined upon the otherwise light-coloured substances under investigation. Golgi had employed this method of his upon the brain and spinal cord of the human being and of certain quadrupeds and birds, and had published his results, partly in short articles in Italian periodicals, and partly in a work of larger dimensions, which appeared in 1885. These conclusions of Golgi's appeared so extraordinary to the majority of histologists that they were received with scepticism, and were even in some cases criticised with asperity. But Fridtiof Nansen recognised their significance. He went straight to Italy, familiarised himself on the spot with the

details of the process, and then attempted to apply it on a large scale. So far as I can discover, Nansen was the first to employ the Golgi process in the study of the nervous system of invertebrates. Golgi's pupil Fusari had previously tested the process in the study of fishes, but had not applied it to the lowest vertebrates, the amphioxus and the myxine.

By the use both of this new method and of the above-mentioned *Schnitzerei* process, followed by staining with the usual dyes (hematoxylin and aniline colours), Nansen succeeded in penetrating some way further than his predecessors into the secrets of the structure of the central nervous system. His long paper, published (in English) in the 'Annual Report of the Bergen Museum for 1886,' under the title of *The Structure and Combination of the Histological Elements of the Central Nervous System*, will therefore always take an honourable place in the literature of this department of science. With regard to the most delicate collocation of nerve-cells and fibres, Nansen took up and worked out a fundamental conception which had been originally enunciated by the great German histologist Leydig. Though I, for my part, have not been able to accept this view (of which a detailed account would be out of place), I must emphasise the fact that we are here face to face with a question which cannot as yet be answered with certainty, and upon which the last word has assuredly not been said.

In his studies of the central nervous system of invertebrates, Nansen succeeded in tracing the ganglia of the nerve cells for longer or shorter distances, and in many cases found that they gave off lesser side-shoots, which struck inwards, and contributed to form the so-called granular matter (*punkt-substans*). Had he had the opportunity of carrying

his investigations further, with the assistance of the Golgi method, and especially if he had been able to take up another process, discovered about this time by Professor Ehrlich—to wit, the colouring of the nerve-elements of living animals by the aid of metylen blue—he would certainly have been able to co-operate to a greater extent in that unravelling of the finer structure of the nervous system in the lower animals which has taken place during the past ten years. But Nansen, it is clear, was already sensible of an ever-increasing bent towards Arctic exploration; and such is the nature of scientific work that each department of it claims the entire and exclusive devotion of those engaged in it. As the poet (Carl Snoilsky) says:

'You must be one thing, and one alone, and that wholly.'

Work with the microscope of necessity demands much time. Concurrently with it, even if a man brings all his energies to bear, he can scarcely do much in other departments. However regrettable it may be that Fridtiof Nansen was unable to carry further the investigations into the central nervous system which had been begun with such spirit and on so large a scale, it must be admitted that in this field there was no lack of competent workers. In the domain of Arctic exploration, on the other hand, Fridtiof Nansen stood first among the men on whom progress depended, as he plainly showed, not long after, by his journey across the Greenland ice-fields, and later by his splendidly conceived Polar expedition.

In the course of his investigations into the more delicate structure of the spinal cord of the amphioxus and myxine, Nansen made several discoveries, upon one or two of which, as possessing the most general significance, I must touch

at greater length. In the spinal cord of the amphioxus he found no true neuroglia—that supporting or insulating tissue wherein the actual nerve-elements generally lie embedded—but he described, in the tissues around the central canal, a species of 'epithelial' cells (ependym) radiating outwards, in which he recognised the neuroglia cells of this animal, maintaining that they represented the lowest form of neuroglia known among the vertebrates. In the myxine, indeed, he again found these ependym cells, but also true neuroglia cells, although of a peculiar character; whence he concluded that the neuroglia cells have their origin in the outer cotyledon, from which also the actual nerve tissue is derived. This theory of Nansen's has since been corroborated by numerous observations, and has won universal acceptance. In the case of the myxine, he further discovered that the nerve fibres which compose the sensitive nerve roots of the spinal cord, after their entrance into the spinal cord, divide into two branches, of which the one runs at right angles and backwards (down), and the other forwards, up the spinal cord. This discovery has since been verified by the Spanish nerve-histologist, Ramóny Cajal, and by various other investigators, and is proved, in the case of vertebrates, to be an important and universal law. The bifurcation of the sensitive nerve-roots ought therefore to be designated by the name of its real discoverer, Nansen.

Soon after this we find the young Norwegian biologist engaged upon the solution of another problem which had hitherto defied research—the problem as to the development of the above-mentioned 'hag,' *myxine glutinosa*. This singular animal, one of the lowest of vertebrates, swarms in the northern seas, along the entire Norwegian coast, and also on the west coast of Sweden. On several accounts, it

would be of interest to science to discover its mode of propagation and development. The English zoologist, G. P. Cunningham, who had applied himself most zealously to this problem, had advanced the opinion (in his first treatise on the subject, published in 1886) that a great number of these animals are hermaphrodite, particularly in the younger, undeveloped state, since the hinder part of the mesovarium formed a mesorchium, which contained germs in its vesicles in different stages of development. He also described certain cell-forms which he regarded as spermatozoa.

Fridtiof Nansen now subjected this question of the myxine to closer study. After laborious investigation, he came to conclusions which in the main coincided with Cunningham's. In his essay, entitled *A Protandric Hermaphrodite* (*Myxine glutinosa, L.*) *amongst the Vertebrates* (published in the 'Annual Report of the Bergen Museum for 1887'), he advances the opinion that the myxine in its earlier phases is a masculine animal, while in its later development it becomes, for the most part, feminine. He also described the development of the mesorchium vesicles and the appearance of the spermatozoa at different stages of development. There is much evidence in favour of his view; but, in spite of zealous and comprehensive investigation, neither he nor the zoologists who have since devoted themselves to the subject have succeeded in making entirely clear the development of this singular animal. The works of Cunningham and Nansen, however, have brought us somewhat nearer to the solution of the problem.

Fridtiof Nansen had for many years taken a lively interest in yet another important biological problem, viz. the development of the Cetaceans. These remarkable marine mam-

mals, obviously descended from animals which formerly lived on land, must, in their development, show traces of their origin. What was known on this subject possessed great interest, but much still remained to be discovered. It was a question of obtaining good material for study; but this was particularly difficult to come by. Fridtiof Nansen did not shrink from the task. With his customary perseverance, he succeeded in adding considerably to the number of embryo Cetaceans in the Bergen Museum. When he came home from his great expedition across the interior of Greenland, he determined to devote himself to the investigation of these interesting embryos, and as soon as he was settled in Christiania he joined forces with his friend, Professor Gustav Guldberg, who had already made valuable investigations into the anatomy of the whale. So, in the winter of 1891–92, they worked together in the anatomical school of the University of Christiania, concerning themselves in particular with the small embryos of the *Lagenorhynchus acutus*. After that, Nansen's time was so much taken up with preparations for the North Pole Expedition that he was unable to do more than hold an occasional conference with his collaborator on the subject of their investigations, and left the carrying out of the scheme entirely to Professor Guldberg.

Towards the end of 1894 the first part of their folio work appeared, under the title: 'On the Development and Structure of the Whale. Part I. On the Development of the Delphin; by Gustaf Guldberg and Fridtiof Nansen. Bergen Museum. V.' For the reasons stated, it is not possible for me to say how much of this great work, illustrated with seven plates, was done by Nansen; but in any case he essentially contributed to the collection of material, and

shared in the planning of the essay, besides taking part in the earlier stages of the investigations.

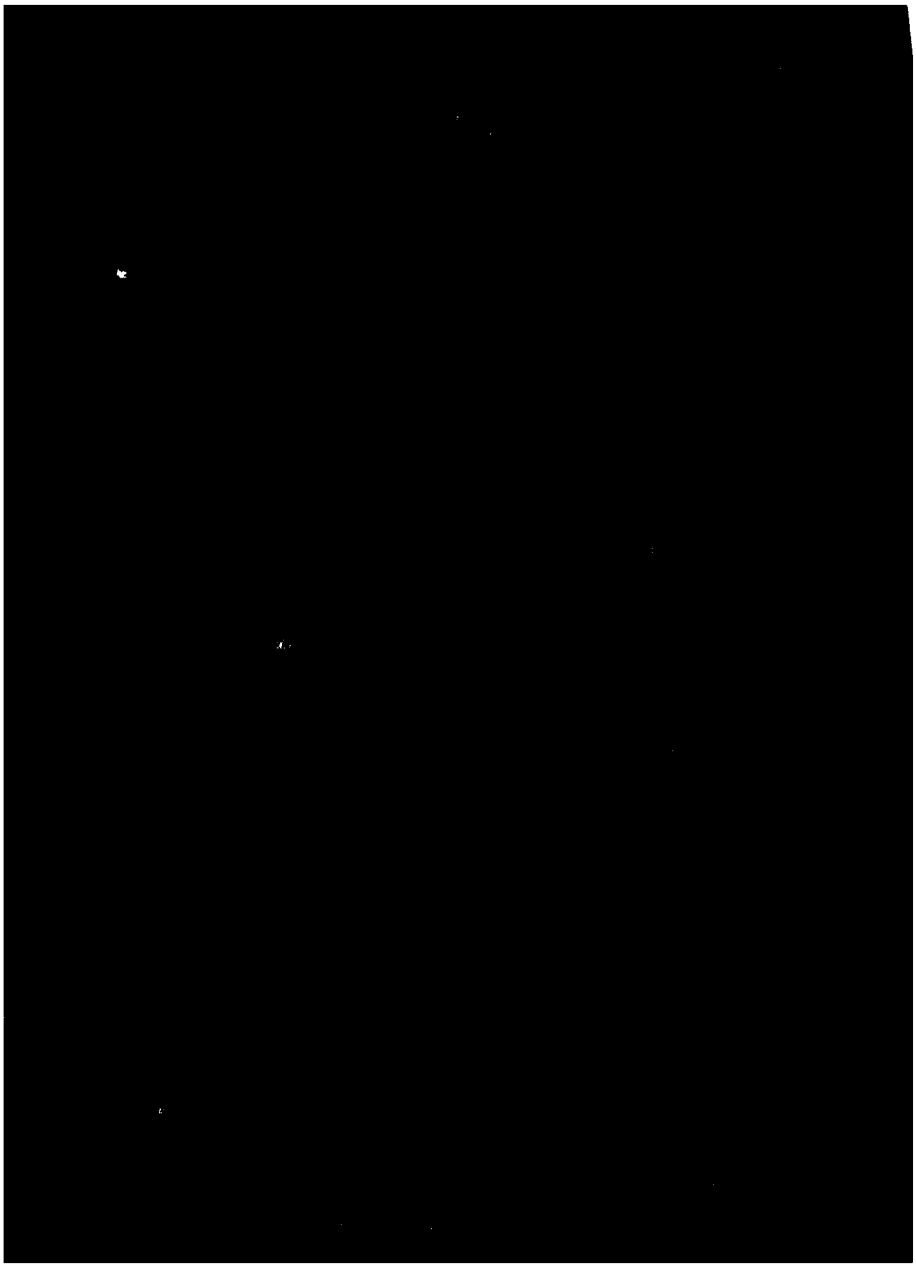
The above brief outline shows beyond a doubt that Fridtiof Nansen, in a space of scarcely five years—a period which must be regarded as particularly limited and meagre where wide-reaching biological research is concerned—succeeded in accomplishing several pieces of solid work. It likewise appears that, as his largely moulded nature would lead us to expect, he grappled gallantly with great and difficult problems, and showed a faculty of insight that went straight to the heart of things. No one who has any real knowledge of his character can doubt that, if he had not been drawn by an irresistible inward vocation towards the great goal of polar research, he would have carried on his admirably planned biological investigations with the perseverance and tenacious energy peculiar to him, and would have added to his record many another important piece of work.

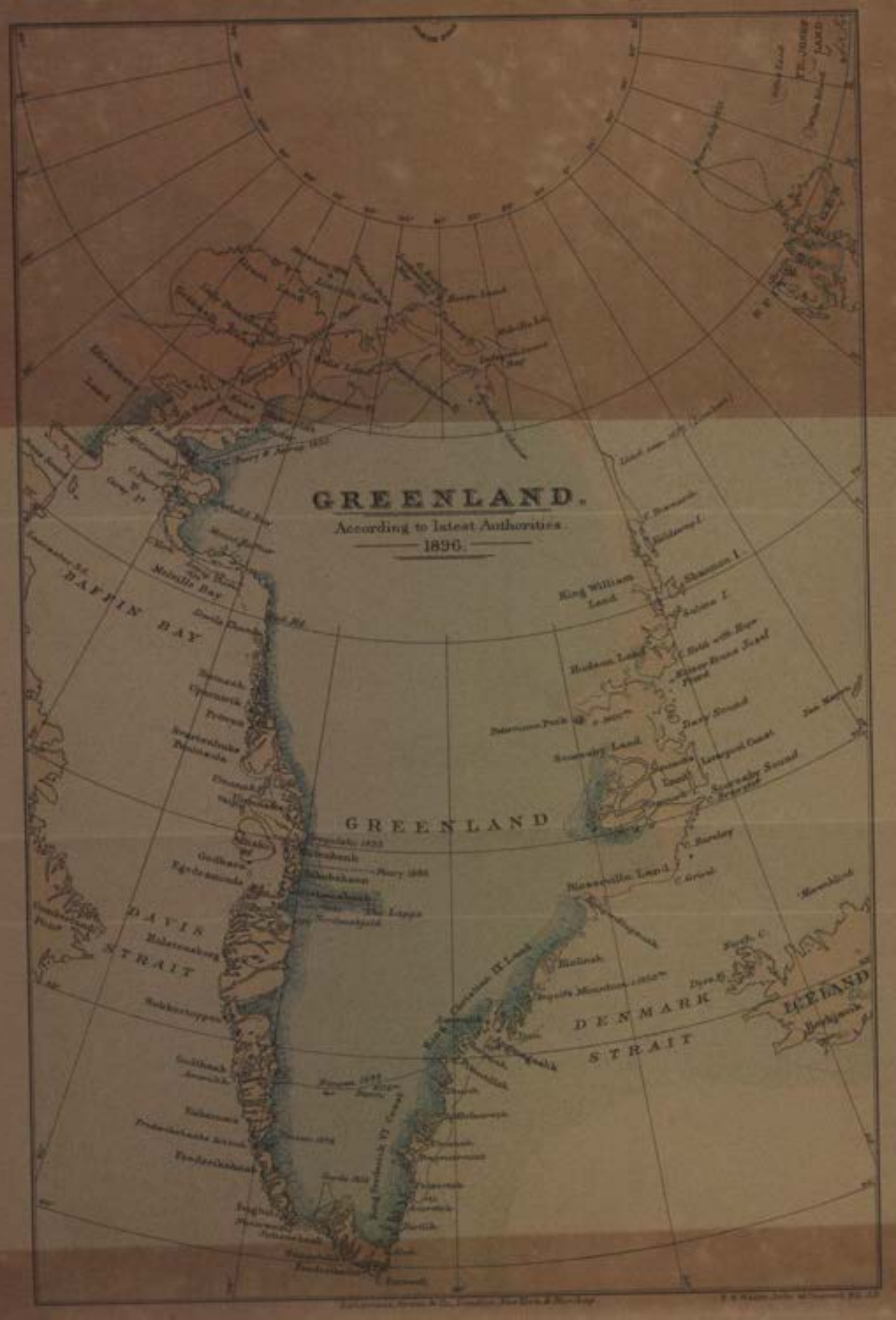
Everyone, therefore, who is interested in biology hopes that, after happily achieving his polar quest, Nansen will return with the whole force of his mind to that field of investigation, in which he has doubtless many tasks to execute, many discoveries to make, many problems to solve.

By the great public, Fridtiof Nansen is known and admired chiefly as the dauntless explorer of the unknown wastes of the North Pole. I trust the above little sketch may help to impress upon the public, and particularly on the Scandinavian peoples, that Nansen is also an investigator of note in another domain, which, though it does not attract so much attention, perhaps deserves it no less.

Voyages of discovery in the quiet study, in the laboratory, in the world of the microscope, in Nature's secret workshop—

these too minister to the enlightenment of mankind and the progress of civilisation. In this field Fridtiof Nansen proved himself a born discoverer, and, at an unusually early age, developed an activity which was rich in promise. Let us hope he may be destined soon to take up again the threads which his Arctic exploration has for the present forced him to drop. Let us hope he may continue his voyages of discovery in the extensive and as yet imperfectly charted domain of biology, in which limitless unknown regions still await exploration.




GREENLAND.
According to latest Authorities.
1896.
BAFFIN BAY
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DAVIS STRAIT
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ICELAND

CHAPTER VIII

GREENLAND

We are now at the turning-point in Nansen's life, when he seriously sets about the preparations for his expedition to Greenland. The previous chapter will, we hope, have dissipated the misapprehension that Nansen is a great sportsman and nothing more. In this chapter and the next we shall endeavour to make clear the scientific import of his work as an explorer. We shall give a brief geographical survey of the country which he was the first to penetrate from east to west, and an account of the geological period upon which his achievement was to shed a new light. The chapters, then, will deal with 'Greenland' and with 'The Great Ice Age.'

When, in the summer of 985, Eric the Red returned to Iceland, whence, several years earlier, he had fled as an outlawed manslayer, he told of a great newly discovered land far to the west, which he called Greenland, because, as he said, people would be encouraged to settle there if the country bore an attractive name. As a matter of fact (according to the Saga) many fell into the trap; for that very same summer twenty-five ships are said to have sailed for Greenland from Breidafiord and Borgarfiord in Iceland. Only fourteen of them, however, reached their destination; the rest were driven back or wrecked.

Red Eric, to put it mildly, showed no pedantic regard

for the truth. He ought rather to have called the country 'Great Iceland;' for while there are very few green spots in Greenland, there are not many places on earth which so superabound in ice.

It is a strange land. Until within the last few years we did not know much more about it than our forefathers knew 900 years ago. We Scandinavians may congratulate ourselves on the fact that this increase in the world's knowledge is for the most part due to us—to explorations conducted by Danes, Norwegians, and Swedes.

Greenland, as we may now conclude with every probability, is an island, the largest in the world, having an area of from $1\frac{3}{4}$ to 2 million square kilometres. It is thus two and a half times as large as New Guinea and Borneo, three times as large as Madagascar. It is a long and narrow land covering about 23 degrees of latitude (roughly speaking, 1,700 miles) from the southern point, Cape Farewell, which lies almost exactly in the latitude of Christiania, to the northern point which was reached by Lockwood in 1882, and was sighted by Peary and Astrup in 1892. Though more than twice as large as Norway and Sweden together, it is inhabited by only a little over 10,000 people, who, with the utmost difficulty, support life by fishing and seal-hunting. There is an average of one man to every 200 square kilometres. The Sahara and the Desert of Gobi are not more sparsely populated.

Thus Greenland, in spite of Red Eric's euphemism, is one of the most barren regions on earth, an immitigable waste, where no artesian wells, no artificial appliances whatever, are of any avail. It is an ice desert, 'The Sahara of the North.'

But, as we have said, until a few years ago we had

no clear conception of the actual nature of the country. It was known, especially through the excellent works of the Director of the Danish colony, Dr. Rink, that the country consists of a narrow coast-line of bare rocky land, excessively broken up by fiords, and that the heads either of the fiords themselves, or of the valleys which lead up from them, are invariably blocked by mighty glaciers, which in many places extend to the verge of the open sea. Any one trying to penetrate from the coast valleys into the interior of the country is confronted in every case by a sheer wall of ice; and on clambering laboriously up this shattered and rifted ice-wall, the explorer sees nothing beyond but ice, ice without end, as far as the eye can reach.

It was Rink's clear statement, founded on personal observations extending over many years, that first led people to conceive the existence of a country entirely covered by a vast ice-crust, to which he gave the name of the Inland Ice.

This information came just at an opportune moment for science. At that very time—about the middle of the present century—people were beginning to grasp the idea that throughout the whole of Northern Europe and America, the surface of the earth must at a recent period (geologically speaking) have been covered with ice, which had left many traces behind it.

Thus Greenland came to possess an enormous interest for science as a still extant illustration of the condition of Northern Europe during the Great Ice Age. And a knowledge of this inland ice was of importance not only to the geologist, but also to the biologist, the meteorologist, and the geographer. Its thorough investigation was necessary, as bearing upon a long series of questions of the highest interest; not to mention that the universal-human craving

for knowledge could not long tolerate the existence upon the map of the world of so large a tract of *terra incognita*.

Thanks in particular to the sacrifices and exertions of the Danes, the narrow coast-line of Greenland has now been pretty thoroughly mapped, and examined from the geological point of view—first the west coast, from Cape Farewell northwards, and afterwards the east coast, which the drift-ice from the polar sea renders much more difficult of access. In 1875 Prof. Johnstrup issued a proposal for a systematic geological and geographical investigation of Greenland; and, from 1876 onwards, a number of Danish explorers have quietly carried on this arduous and admirable work in the cause of science, the results being for the most part published from time to time in the excellent *Meddelelser om Grönland* ('Reports from Greenland'). Special mention must be made in this connection of the geologist, K. J. V. Steenstrup, who spent eight summers and five winters in Greenland; and also of J. A. D. Jensen, R. R. I. Hammer, C. H. Ryder, G. F. Holm, V. Garde, and A. Kornerup. In this way the Danes have systematically explored, and for the most part charted, the west coast, right up to their most northern colonies, Upernivik and Tessiusak (about 73° N. lat.). The country to the north, along Melville Bay and Smith Sound, Kane Basin, Kennedy Channel, and Robeson Channel, has for the most part been explored by English and American Arctic Expeditions, which have here reached the most northern points upon the globe as yet known to have been attained by any civilised being. The Nares Expedition (1875–76) penetrated as far as 83° 22′, and Lieutenant Lockwood, a member of the Greely Expedition (1881–84) of melancholy celebrity, is said to have pushed on as far as 83° 24′.

The east coast of Greenland has also of late years been systematically explored by the Danes, especially by Holm's 'woman-boat' expedition of 1883–85. For the rest, the belt of drift ice barricading this almost inaccessible coast has been broken through for investigation only at scattered points—in particular by the Sabine, Scoresby, and Koldewey Expeditions, by the *Hansa* Expedition, and the Swedish *Sophia* Expedition. Thus there are still great stretches of this coast of which we know very little. For instance, between Cape Bismarck (about 77° N. lat.) and Independence Bay (about 81½° N. lat.), explored by Peary and Astrup in 1892, there are only two points where land has been descried, and that more than a hundred years ago (1770 and 1775).

It may be said, then, that we are now acquainted in broad outline with the coasts of this remarkable country. They are not everywhere equally inhospitable; yet it must on the whole be described as a land where only an extremely easily contented race of men are able, with the utmost toil, to support life without extraneous help. The narrow strip of land along the entire coast of Greenland is wild, naked, and rocky. While the country is more than 800 miles wide, the ice-free coast strip very rarely (as at Holstenborg) extends to so much as 100 miles. As a rule it is only a mile or two in width, and in many places the glaciers stretch right down to the sea. The outer edge of the coast has a flora consisting of lichen, moss, and sedge. Far up the long fiords of the south-west coast may be found scanty copses of willow, dwarf birch, and juniper; and in the colonies on this coast, cabbages, radishes, carrots, and parsley are grown—indeed, in favourable summers, in the south, one may even hope for a little crop of green peas. But no forest tree grows on this coast, no corn ripens.

In miserable huts of earth and stones, some 10,000 Greenland Eskimos manage to support life on the coasts of this country, carrying on a desperate struggle for existence by means of seal- and whale-hunting and fishing. They are kindly, amiable, children of nature, who, like all such races, must inevitably be exterminated by the benefactions of civilisation, which are quite unsuited to them. All travellers are agreed that the Greenlanders love their poor, barren country, and we do not find that they seek to better their condition by emigration.

In its own way it is a fine country, with a wild and stately natural beauty, not easily to be equalled. It is true that wild mountain forms, with jagged peaks and pinnacles and deep narrow fiords, are to be found in abundance in Norway, which, indeed, especially in the wild mountain districts of Nordland and along the Vestfiord, bears no small resemblance to Greenland. But in Greenland the mountains are loftier and much more barren right down to the coast; and not only do whales and seals abound in the fiords, but also swarms of icebergs formed by the 'calving' of the glaciers. And then the glaciers themselves! We have glaciers, too; but in comparison with those of Greenland the mightiest of them is as a little brook to the Amazon or the Nile.

We talk about the Folgefonn, the Justedal glacier or the Svartisen glaciers; they are dwarfs and pigmies compared to the Jakobshavn glacier, to say nothing of the Humboldt glacier, which has a frontage on Kane Basin of something like seventy miles.

By day and by night, through summer and winter, year out and year in, these innumerable glaciers glide off on every side, as outlets for the inland ice; and they travel at

no such a slow pace either. Whereas Sexe found the rate of the Buar glacier's advance to be about one-tenth of a metre in the twenty-four hours, Helland ascertained that the Jakobshavn glacier in Greenland travels twenty metres in the same space of time—that is to say, 200 times as fast. Ryder, moreover, noted a still higher rate of advance in the glacier at Augpadlartok, viz. over thirty-one metres in the twenty-four hours. As rivers, with us, form outlets for lakes, so these numerous and mighty glaciers or ice-rivers round the entire coast of Greenland form outlets for the inland ice.

It is no small quantity of ice that these frozen rivers carry to the sea. The bulk of ice which is 'calved' or thrown off by the glaciers has been estimated by Rink at more than 300 million cubic metres annually; and this is certainly an understatement; perhaps ten times that amount would be nearer the truth. It was supposed in Rink's time that the glaciers on the west coast were the main channels by which the inland ice disgorged itself into the sea; whereas Holm's 'woman-boat' expedition along the east coast (1883–85) has shown that the reverse is the case, the main outlets being to the east.

The atmosphere of the Greenland coast is cold, raw, and moist. The sea along the rocky shore is full of ice the whole year round, some of it consisting of icebergs given off by the glaciers, and the rest of drift-ice from the Polar sea, carried down the east coast of Greenland by a mighty current, which then doubles Cape Farewell, and follows the line of the west coast northwards. The mean temperature here is accordingly far lower than that usually found in these latitudes. The country is not only sea-girt but ice-girt. It is the land of the Great Ice, covered by the

mightiest ice-field hitherto known on the northern hemisphere, extending perhaps to more than 1,500,000 square kilometres.

One would imagine that the Greenlanders themselves would have found it to their interest, or would have been driven by necessity, to acquaint themselves with the vast uplands of ice which glide seawards in the form of glaciers along their entire coast. This, however, is not the case. The Greenlander himself has a superstitious terror of the inland ice. It is the home of his evil spirits, his ghosts, his apparitions and shades (*tarajuatsiak*), his trolls (*timersek* and *erkilik*), his ice-men, who are supposed to be twice as tall as ordinary people, and a whole host of other supernatural beings. Besides, what should he do there? His life is a continual fight for food, and on the inland ice there is neither whale nor seal, neither reindeer nor ptarmigan—in short, no animal fit for food. It is a lifeless desert.

We need not wonder, then, that the Greenlanders themselves have scarcely any knowledge of the inland ice; and until a few years ago the rest of the world was equally ignorant.

It is clear, nevertheless, that our forefathers were very well acquainted with the nature of the country. We read in the *Kongespeil* ('The Mirror of Kings'): 'But as to your question whether the land is free from ice, or covered with ice like the sea, then you must know that there is a small portion of the land which is bare of ice, but all the rest is covered with it.'

This knowledge of the interior, however, had been lost in the lapse of centuries, and had given place to the most extravagant notions, based upon anything in the world except actual observation.

As early as 1728 a vain attempt to reach the inland ice was made by Major Hans Enevold Paars; but the first man we know of who really crossed the edge, though indeed the edge only, of the inland ice, was a Danish merchant, Lars Dalager, who had settled at the colony of Frederikshaab in South Greenland. In September 1752 he made his way a few miles inland over the ice, accompanied by a Greenlander with his daughter, and three young unmarried Eskimos. They suffered horribly from the cold the last night, and were obliged to turn back for lack of provisions, and because their shoes had utterly gone to pieces on the way. Looking from a lofty pinnacle (called by the natives a *nunatak*) on the edge of the inland ice, Dalager saw it stretching, in the form of a level waste of ice and snow, far as the eye could reach. He regarded it as impossible for any human being to reach the opposite coast alive, partly because of the difficulty of conveying sufficient provision for such a march, partly because the cold at night was so intense that, in his opinion, any one who had to pass many nights on the ice must inevitably freeze to death. Nansen's experience of the temperature of the inland ice unexpectedly confirmed Dalager's observation, though fortunately not his prophecy.

A hundred years elapsed before any other serious attempt was made to explore the inland ice. It was the American Arctic traveller, J. J. Hayes, who first tried to penetrate any considerable distance into the barren ice-desert. Hayes and five other men (among them a Dane, C. Petersen) made their way up 'Brother John's Glacier,' which runs out from the inland ice near Port Foulke, on Whale Sound, in about 78¼° N. lat. The ice-journey began on October 23, 1860. According to their

own estimate, in the course of three days' travelling they penetrated at least sixty miles into the interior, and had reached a height of about 5,000 feet, when a tremendous storm compelled them to turn back. The temperature, at their turning-point, was very low for the season of the year —viz. −37° C. (−35° Fahr.). It is, however, very doubtful whether, over a surface so terribly broken as he describes, Hayes can have covered so much as sixty miles in three days.

Another quite unsuccessful attempt to penetrate the inland ice was made in the same year by the English traveller, John Rae.

In 1867 the well-known English mountaineers, Whymper and Brown, were commissioned by the Royal Society to make another attempt. They started from Jakobshavn, but met with no success. The season of the year (July 26) was unfavourable, as the heat had melted all the snow along the outer ridge of the inland ice, so that the ice itself was laid bare, and furrowed with millions of clefts and crevasses, which proved impassable. They were therefore obliged to turn back, after vain exertions, entirely baffled. They had taken several Greenlanders with them, who were very much alarmed, before the expedition set out, because one of them thought he had seen three men moving on the ice, who were taken to be either shades of the old Norsemen or Eskimo ghosts. We may conclude, then, that the natives were not particularly courageous or valuable members of such an expedition.

The first at all successful attempt to penetrate the inland ice—successful in so far that a considerable distance was covered and important scientific results obtained—was that undertaken by Professor Nordenskiöld and Dr. Berggren in 1870. Their point of departure was the southern arm of

the Aulaitsivik Fiord (68¼° N. lat.), a little south of the colony of Kristianshaab. The ice was reached and attacked on July 19. Taking no tent, but only a sleeping-bag and a sledge for their provisions and other necessaries, the intrepid explorers set off on their perilous march. The sledge had soon to be abandoned, since the numberless clefts and crevasses made it impossible to drag it along. So they took with them only what they could carry in their knapsacks. Two Greenlanders accompanied them until the morning of the 22nd, but would go no further. Nordenskiöld and Berggren went on alone, with their knapsacks on their backs, for two days more, and then turned back, at a height of 2,200 feet above the sea, after having penetrated between thirty-five and forty miles from the edge of the ice. The great elevation of the point at which they turned enabled them to see an immense distance over the interior of the country. They could descry nothing but the endless ice-field sloping evenly upwards to the east, so that the horizon was bounded by an ice-rim almost as unbroken as that of the sea. After two days' forced march they got back to the fiord and their boat on the night of July 26.

Eight years passed before the next noteworthy attempt was made to explore the inland ice, this time by an expedition despatched by the Danish Government, under the conduct of Lieutenant J. A. D. Jensen, of the royal navy. His party consisted of the promising young Danish geologist, A. Kornerup, who died three years later, Herr Groth, an architect, and, lastly, a Greenlander named Habakuk. The expedition was conducted with much energy and skill, and its scientific results were in many respects considerable. In proportion to the time occupied and the labours and dangers undergone, they did not succeed in making their

way very far over the inland ice, properly so called. They were impeded by a series of unfortunate circumstances. On the one hand, the weather was particularly unfavourable, and the expedition suffered from frequent and protracted snow-storms and fogs; and on the other hand, the ice in the region attacked was so extraordinarily rugged and rifted, that they could only with the utmost difficulty make any progress at all. By the light of later experience, we can now see that the starting-point was unfortunately chosen, since the expedition had to traverse the longitudinal axis of one of the furthest projecting tongues of ice, that which ends in the 'Frederikshaab Isblink,' at about 62½° N. lat., between Fiskernæs and Frederikshaab. It was only to be expected that the ice of this protruding tongue of glacier should be particularly broken and dangerous. Nevertheless, the expedition, setting out on July 14, after ten days of indescribable toil and difficulty, reached a range of bare and rocky peaks, projecting above the snowfield about twenty-six miles from its edge, which were called after the leader of the party, Jensen's Nunataks. At the foot of one of these nunataks the explorers were overtaken by a snowstorm, which lasted an entire week, during which they had to keep to their tent. The worst of it was that their stock of provisions was extremely scanty, so that each man received only a daily ration of about ⅜ kg.—about ⅕ of the usual allowance upon such exhausting expeditions. Their cooking apparatus, too, proved useless, and the canvas shoes of the whole party had quite gone to pieces. The prospects of the expedition were thus anything but bright. Finally, on the seventh day, the weather cleared. From the top of the nunatak, at a height of about 4,960 feet, Jensen looked eastward over the interior of the country. The endless expanse of the

inland ice stretched around him on all sides, rising higher and higher to the eastward, as far as the eye could see, until it melted into the sky at the horizon. The return journey, too, was excessively difficult and dangerous. Not until three weeks after their departure did the expedition regain their starting-place, where the Greenlanders who were waiting for them had long ago begun to doubt whether they should ever see them again.

According to Greenland legend, the interior of the country was supposed to be free from ice; indeed, the theory of an ice-free interior, and the desire to demonstrate it, had been the motive of some of the earlier expeditions—for instance, of Whymper and Brown's attempt in 1867. Baron A. E. Nordenskiöld, the great pioneer of systematic Polar investigation, so far as Scandinavia is concerned, after his first journey on the inland ice in 1870, had undertaken a whole series of Arctic expeditions—to Spitzbergen, including an examination of the north-east glacier district, in 1872–73; to Nova Zembla and the Yenisei in 1875; again to the mouth of the Yenisei in 1876; and, finally, the great circumnavigation of Asia on board the *Vega* in 1878–79. He now, with the support of the eminent physicist, Professor Edlund, advanced an hypothesis as to the probability of an ice-free interior of Greenland; and this hypothesis was, to some extent, the occasion of the great Swedish expedition, at the head of which Nordenskiöld set forth once more over the inland ice, this time better equipped than on his first attempt in 1870, which had, nevertheless, produced such valuable results. The expedition, the whole expense of which was borne by Baron Oscar Dickson,[1] had its own steamship, the *Sophia*, and was in all respects excellently fitted out.

[1] This was the seventh Arctic expedition financed by Baron Dickson.

This time, too, Nordenskiöld chose for his point of departure the region south of Kristianshaab, or, more precisely, the head of the northern branch of the Aulaitsivik Fiord at about 68½° N. lat. In the actual journey over the ice, only nine men took part besides Nordenskiöld himself, among them two Lapps, named Lars Tuorda and Anders Rossa. The start was made on July 7, again at the very mildest season of the year. They thus escaped the excessively low temperature which prevails at a later season upon the inland ice; but, on the other hand, the labour of making their way with hand-sledges and baggage through the half-melted slush was so much the greater. After advancing for fourteen days, they found it utterly impossible to drag the hand-sledges any further. They had come upon a plain of half-melted snow, into which they sank so deep at every step that there was nothing for it but to turn back. These fourteen days of strenuous toil had brought them about seventy-eight miles from the margin of the ice. Early on the morning of July 22, the two Lapps were sent further inland on their snowshoes, while the rest awaited their return. At the end of 57 hours the Lapps came back. According to their own account, they had pushed on to a point about 150 miles east of the camp, and to an altitude of about 5,000 feet above the level of the sea. Nansen's subsequent experience, however, has shown it to be highly improbable that they could have got so far; he conjectures that they turned back at a point about fifty miles east of the camp, and therefore something like 130 miles from the margin of the ice. At the furthest point they attained, the Lapps saw only a smooth ice-field before them, covered with fine loose snow.

The return journey of the expedition was accomplished

without misadventure, and on August 3 it again reached the margin of the inland ice, after having spent four weeks in the interior.

Thus the expedition had attained particularly important results, having pushed farther inland than any previous expedition. It found no oases in the ice desert; but it brought back the important information that the terribly rugged and rifted surface which the ice had presented to all previous explorers must be confined to the outer belt of the inland ice, while the interior consisted for the most part of an even snow-covered ice-field. Nordenskiöld's expedition in 1883 was, in fact, the only one which had hitherto penetrated within this deeply-fissured outer belt, and had thus definitely ascertained the nature of the surface within it.

Yet another serious attempt to penetrate the interior of Greenland preceded Nansen's expedition. This was the daring journey undertaken in 1886, by the afterwards celebrated traveller Robert E. Peary, an engineer in the American navy, and a Dane named Christian Maigaard, an employé of the Royal Danish Greenland Company. Peary's original idea had been to make use of Greenland dogs and sledges for the journey; but at the last moment, the Greenlanders hired to accompany them refused to do so, and took themselves off with their dogs and sledges. There was nothing for it, then, but to start on foot and alone, dragging the provisions and other necessaries on two light sledges which they had brought with them. In order to lighten their baggage, they took no tent, but only a tarpaulin, under which they slept in the lee of the sledges. Sometimes, too, they built themselves snow-huts. They began the ascent of the ice on June 28, and continued their eastward march, with several interruptions on account of the weather, till

July 19, when they found themselves, as they calculated, about 110 miles from the margin of the inland ice, and at a height of about 7,500 feet above the sea. For a considerable distance they had been able to use the snowshoes they had brought with them; for the surface of the ice, except in the outer zone, was particularly even and covered with dry snow, the temperature (for they travelled at night, and slept by day) being for the most part under freezing-point. On the return journey they tied the sledges together and rigged up the tarpaulin as a sail, and in this fashion, during the first three days and nights, they sailed at a spanking rate about forty-five geographical miles. They reached their camp on the morning of July 24, having spent twenty-three days and nights on the ice.

No previous expedition had, with such simple equipment and at so little expense, achieved such excellent results as this first Peary expedition, which may with justice be said to have been admirably planned and admirably executed.

The utmost limits of the land-ice in Europe during the Great Ice Age.



Longmans, Green, & Co., London, New York, & Bombay.
W. & A. Walker, Edin.r

CHAPTER IX

THE GREAT ICE AGE

When the Scandinavian peasant is working his land he finds, too often, alas! that it is full of stones. Great boulders are strewn over his fields, generally of such size that it does not pay to remove them, so that the plough has simply to pass them by. Here and there blocks occur as large as a good-sized house. If the peasant has an eye for varieties of rock, he will most likely observe that these boulders are of quite another kind of stone from that of the neighbouring mountains; and this will often be the case even when the boulder rests upon the native bed-rock.

These stones upon the earth's surface are, therefore, guests from afar, foreign immigrants; they are 'erratic blocks'—the name was given them long before their origin was understood—which have in many cases come from a great distance. Erratic boulders are found all over Norway, Sweden, and Denmark, and down through North Germany to a line which runs a little south of Leipzic. But there they stop.

At Lützen in Saxony, where Gustavus Adolphus fell, there lies a mighty granite boulder of this description, which is called 'The Swedish Stone.' This name, which commemorates the victory of the Swedes, the science of our century has shown to be justified in a different sense; for the boulder, an alien in that environment, is in reality a piece of Swedish

granite, and must at some former time have been transported from Sweden to Saxony.

The study of erratic boulders led little by little to the study of gravel and loose strata in general. It was thus ascertained that enormous quantities of Finnish rock are scattered over the low plains of Northern Russia, especially in the Baltic provinces, while masses of Swedish rock bestrew the plains of North Germany and the Danish Islands, and hosts of Norwegian boulders are scattered over Northern Jutland, the north-west corner of Germany, Holland, and even over the east coast of England.

Indeed, we can now go further than this. The whole North European plain, with all its different strata of gravel and earth, is for the most part built up of material which has been transported thither, at one time or another, from Finland and the Scandinavian peninsula. The fertile Danish meadows are in this sense composed of Swedish and Norwegian earth. The myth of Gefion, who transplanted the island of Zealand from the place where Lake Wener now lies, is not so entirely meaningless after all.

What manner of force is it which has removed all these masses of stone and gravel, and scattered them over the plains?

According to popular legend, it was trolls and giants who amused themselves by these feats of strength; we, at the present day, know that the trolls were the forces of nature herself. When science first began to inquire into these matters, it was thought that water was the force which had moved the erratic boulders and scattered such enormous masses of gravel and stone and earth broadcast over the plains. A mighty flood—a deluge—was supposed to have swept over mountain and valley, and torn away, and carried

along with it over the lowlands, gigantic quantities of rock and rubble. At first, therefore, geologists applied the name *diluvium* to the deposits of this hypothetical deluge—a term which is employed by many to this day.

It has long been ascertained, however, that there never was a deluge in this sense, and in particular that the sedimentary strata of Northern Europe have nothing in the world to do with the Biblical 'flood,' which was doubtless a quite local occurrence—an inundation of the plains watered by the Euphrates and the Tigris.

Then people began to connect the dispersion of the gravel and soil over the plains with the fact, which science had by this time demonstrated, that the Scandinavian peninsula must formerly have been covered with ice, as Greenland is now. They conjectured that the erratic boulders and gravel strata were transported from Scandinavia, and scattered over the plains, by drift-ice and floating icebergs which had 'calved' in the Norwegian or Swedish fiords, and were then driven southwards, freighted with gravel and stones, across the lowlands of Northern Europe, which were conceived as lying at that time entirely under water. In the course of melting, the icebergs would then deposit the rubble they had brought with them, just as the floating icebergs from Greenland deposit their masses of rubble in the sea between Cape Farewell and the banks of Newfoundland.

It is now known that this explanation (although it has still a certain number of adherents) is quite insufficient to account for the composition of the soil on the plains of Northern Europe. The only tenable theory is that the erratic boulders have been deposited where we now find them by glacier-ice. Their present position (together with a

long series of other circumstances which cannot here be entered into) testifies that the surface of the country must have been covered with glacier-ice, even where we now find neither glaciers nor snow-fields.

By the close of the 'fifties, geologists had incontrovertibly proved that the ground-rock of the Scandinavian peninsula must at one time have been covered by an unbroken sheet of 'land ice.' On this point the evidence afforded by the present state of Greenland was of decisive value. Everywhere in Norway, Sweden, and Finland are found striated (ice-scratched) mountains and smooth *roches moutonnées*, just as in the lower part of the Greenland coast belt. We have everywhere, at our very doors, so to speak, ancient rubble-banks, moraines, left behind by the land-ice, just as we find them to this day along the margin of the land-ice in Greenland. The configuration, too, of the mountains and valleys of Norway, and of the fiords and skerries of Norway and Sweden, has been recognised by degrees as analogous to that of the mountains, fiords, and skerries of Greenland, and has been found explicable only on the assumption that the whole of Scandinavia was at one time covered, as Greenland is to-day, by a vast sheet of land ice.

But from the beginning of the 'eighties (or, properly speaking, as early as the beginning of the 'seventies) it came to be recognised that we could not stop at this point. The Swedish geologists in particular, and especially Professor Torell, have shown that the North European land ice—unlike the Greenland ice-sheet, which is now surrounded by an ice-free coast belt—was not confined to the Scandinavian peninsula. On the contrary, it may now be regarded as sufficiently demonstrated, through the investigations of the past twenty-five years, that the enormous masses of

gravel which cover, and for the most part conceal, the bed-rock of the entire North European plain, have in the main been deposited by a continuous ice-sheet, which at one time spread over the whole of Northern Europe.

Here, then, we come upon a much larger phenomenon than that presented by Greenland; perhaps the parallel in this case should rather be sought in the condition of things at the South Pole, if Murray is right in conjecturing that where we formerly assumed the existence of a sea, we shall more probably find a huge ice-covered continent, perhaps ten to twelve million square kilometres in extent.

The North European land ice must in the same way, when at its fullest development, have arched over the whole of Northern Europe like a mighty shield of ice and snow. Over Scandinavia it must have attained a thickness of at least 3,000 feet, and more probably twice as much. Hence the ice-sheet stretched west, south, and east—covering, without a break, the whole of the North Sea, Scotland, and the greater part of England and Ireland, and reaching out into the Atlantic, to where the bed of the ocean shelves to vast depths—enshrouding Holland, North Germany, and Denmark—and spreading over the entire Baltic, the Gulf of Bothnia, the Baltic provinces, and a long way south over the Russian steppes. The thickness of the ice-sheet must have diminished towards the south, but even so far south as the region where Berlin now stands, its depth was probably about 1,300 feet.

The limit of this enormous expanse of North European land ice at the time of its greatest extent (according to the most recent observations) is indicated on the accompanying map, which is based in essentials on Professor James Geikie's work on *The Great Ice Age* (1894).

The boundary runs, as we see, across the south of England, the northern part of Belgium, the Hartz mountains, along the northern edge of the Erzgebirge and the Carpathians, north of Lemberg in Galicia, and then in a great tongue south of Kief in Russia, after which it forms another tongue to the west of the Volga, and then trends away to the west of the river Kama, and northwards to the Polar Sea. The area of this enormous ice desert must have been not less than about five million square kilometres.

While Northern Europe lay under this vast ice mantle, the Riesengebirge, the Alps, the Jura, the Vosges, the Black Forest, the Caucasus, the Pyrenees, and other mountain ranges were also covered by enormous local glaciers.

Even more gigantic than the European land ice was (according to Chamberlin) the land ice of North America. Here the immense Laurentian glacier covered with its desert of ice five-sixths of Eastern Canada, besides the greater part of the sixteen most northerly States of the Union, extending on the east side to below New York, and in the middle of the Continent still farther south (in Illinois to 37° 35′ N. lat.).

A separate ice sheet extended, in the far west, over great stretches of the North American Cordilleras, from about the 48th degree of latitude, upwards towards the Polar Sea, where it may possibly have joined the Laurentian ice sheet.

Oddly enough, it is supposed by many that Alaska has never been covered with ice.

Besides the two main ice sheets (the Laurentian and the Cordillera), which are supposed to have been separated towards the south by an ice-free region, there existed in North America, no less than in Europe, great local glaciers, especially in the mountain districts to the south of the

Cordillera land ice. The entire area of the North American ice fields is estimated at over ten million square kilometres, thus nearly corresponding in size to the ice-crust which, according to Murray's conjecture, now covers the Antarctic Continent.

As regards Northern Asia, no positive evidence has yet been found of any land ice having covered the flat seaboard of North Siberia. Quite recently, however, Baron von Toll found in Anabara Bay and on the New Siberia Islands indications that these regions, too, may possibly have been covered by a tolerably extensive, though perhaps not particularly massive, land ice. Baron von Toll conjectures that the Polar regions were at that time elevated above the sea, and that thus the rainfall must have been greater—sufficient, indeed, to cause the formation of an extensive ice sheet. He further supposes that after the glacial epoch these regions must have sunk and become submerged, and that the succession of islands to the north of Asia (the New Siberia Islands, Sannikoff Land, and presumably other islands as yet undiscovered) must be simply the summits of the vanished Arctic continent.

In the ocean between Europe and America local ice fields covered the Faröe Islands and Iceland.

Greenland, which, as we know, has to this day its land ice (with an area of about $1\frac{1}{2}$ million square kilometres) must at one time have been totally buried in ice, or at all events to a considerably greater extent than at present. Many suppose that the Greenland ice sheet extended over Ellesmere Land and Grinnell Land, and joined the Laurentian land-ice; but this is not certain. If, as Von Toll thinks, there existed at that time an immense Polar continent covered with ice, which extended over North Siberia, it is

probable that this circumpolar land ice also extended southward over Greenland. As yet, however, the evidence on these points is inconclusive.

It is curious to picture to oneself the aspect of Northern Europe and North America at the time when these conditions obtained. The accepted theory is that at all events Scandinavia and large portions of North America were, during a part of this period, much more elevated above the level of the sea than they are to-day. The greater altitudes would in that case contribute not a little to the formation of the mighty ice sheets. Certain it is that along the whole North Atlantic, from the latitude of New York, and on the European side from the south of England and Ireland, there then stretched northwards a continuous ice cliff or ice wall, probably hundreds of yards in height, from which great icebergs were perpetually breaking loose and floating away to sea, just as they to-day break off from the Humboldt Glacier in North Greenland. This ice wall must have stretched unbroken, right up to the Polar Sea, until it merged in the Arctic land ice.

Within the ice rim stretched an interminable desert of ice and snow with no trace of life, smooth as a convex shield, from Ireland to the Ural Mountains (at least), and from the Polar Sea to the foot of the Carpathians. The boundaries of land and sea in Northern Europe were totally obliterated by the vast ice field, just as to-day no one has the faintest idea what is concealed under the interior expanse of the Greenland ice.

Outside the ice rim a climate prevailed somewhat like that of Spitzbergen at the present day. In France, Central Europe, and Hungary, the reindeer, the Polar fox, the musk-ox and other Arctic animals flourished along with the

mammoth, the elephant of the Ice Age (*Elephas primigenius*), which was much larger than any existing variety of elephant, and had a thick long-haired fur to protect it from the cold, as had also the woolly *Rhinoceros tichorhinus*. The flora of Central Europe (now so warm and genial, the home of the vine and the walnut-tree) consisted at that time of low willows, dwarf birch, and other Arctic growths, now found about the shores of the Polar Sea.

As is proved by the fossil remains of plant and animal life, regions as far south as Italy had then a cold, raw climate, and the Mediterranean contained numbers of animals which have now retreated very much further north.

In the south-eastern portion of Europe, covered, in part at any rate, by the vast expanse of the land ice, was a great sea, the Aralo-Caspian—one gulf of which stretched right up to Kasan, while another extended far into Asia. It was also connected with the Sea of Azov and the Black Sea. The Caspian Sea and the Aral Sea are the remnants of this great basin, and still contain animal forms derived from the time when the Aralo-Caspian was a salt-water sea.

In the interior of Asia, even far to the south, the climate was rainy and raw, and a vast inland sea was formed, almost as large as the Mediterranean, covering the present Tarim basin and Desert of Gobi. At the same time the Himalayas and other great mountain ranges were buried in ice.

Even as far south as Africa, the climate must have been chill and rainy, and great portions of the present Sahara and of the regions about Lake Tchad presumably formed the bed of an extensive inland sea.

The condition of things in Europe was reproduced in America. Here, too, beyond the domain of the ice, a raw and cold Arctic climate prevailed. Here, too, there existed—

at least during a part of this period—a series of vast inland seas, such as Lake Bonneville (about 400 miles in length), of which the Great Salt Lake in Utah may be regarded as the last remnant, Lake Lahontan, in north-eastern Nevada, and several others.

Recent investigations have rendered it extremely probable that not only has there been one such glacial epoch, but that, between the tertiary period and the present geological era, several glacial epochs (a long series, according to some) must have intervened.

Certain it is that after this enormous extension of the land ice over Northern Europe and North America (and portions, at any rate, of Northern Asia and the Arctic regions) there followed a period when the climate became milder and the ice melted away little by little. How far its boundaries shrank to the northward no one knows for certain, but it is beyond question that the whole of the North European plain lay bare of ice. Many suppose that it even disappeared entirely from Scandinavia, while others maintain that it receded only from the southern districts. It is not improbable that the shrinkage of the ice sheet was in some way connected with a subsidence of the land surface throughout extensive regions (such as Scandinavia), during the preceding epoch. In many parts of Central Europe are found deposits dating from this period, which show that, after the ice crust had vanished, the climate became quite warm and genial. A host of southern animals and plants wandered by degrees into the regions where formerly the ice sheet had held all life at bay. The surface of the country was clothed with forests of the deciduous trees which now flourish in England and Central Europe, and of still more southern varieties. The hippopotamus, rhinoceros,

and elephant (*Elephas antiquus*) migrated northward. In all probability there existed at that time a bridge of land from Africa to Europe by way of Pantellaria and Sicily, whereby these tropical varieties of animal life found their way to the continent of Europe and even, by means of a land-bridge over the channel, to England. And together with these more southern animals lived the Irish elk, the aurochs, and other now extinct species. Everything indicates that the climate in Europe was at that time mild, possibly even milder than it is now; and the same may be said of America. In course of time, however, the climate changed again, and became colder and colder. Again, from the mountains of Scandinavia, a mighty ice mantle crept downwards by degrees over the North Sea, the Baltic, and Northern Europe. This was the second great extension of the land ice, the second glaciation. This time the ice did not reach so far south; but the extreme boundaries of the second glaciation of Northern Europe are not yet clearly ascertained. Many believe that this time almost the whole of England lay without the glacial area, and that on the continent its boundary ran in a sort of curve from Hamburg to a little south of Berlin, and then on by Warsaw to the east of St. Petersburg, until it reached the White Sea, west of Archangel.

This renewed extension of the land ice was, of course, again accompanied by a raw, cold climate. Again the reindeer, and even more peculiarly Arctic forms of animal life, roamed the Central European plains; again the forests died out, and dwarf birch and willow took their place.

In America, too, evidence has been found of a fresh extension of the land ice on a great scale; but here, as in

Europe, it probably did not extend so far south as during the first glacial epoch.

Both in Europe and in America, then, we find evidences of two great glacial epochs,[1] two glaciations, during which gigantic ice sheets extended far southward, to regions where a mild and temperate climate now prevails. Moreover, so far as Central Europe, at any rate, is concerned, evidences are found of a temperate interim—an inter-glacial period—between these two Arctic eras.

It is clear, of course, that this repeated spreading and shrinking of the land ice must have been a result of climatic changes. But such radical changes as those here involved must have taken place very slowly, and covered enormous stretches of time. Each of these glacial epochs, as well as the temperate inter-glacial period, must therefore have lasted many thousands, or rather many tens of thousands of years. As the climatic changes no doubt went on imperceptibly during endless spaces of time (from the human point of view), so, too, the accompanying changes in fauna and flora, the accompanying flux and reflux of the land ice, must have proceeded by equally imperceptible degrees through thousands of years. The evidences of these climatic changes and the accompanying changes in the aspect of the world—at one time a lifeless desert, at another a luxuriant forest rich in animal life of now extinct tropical forms—are stored up in the strata of the earth's crust, with their animal and vegetable remains. Geologists have laboriously investigated sections of stratified soil and gravel, now laid bare by river or brook, now by the construction of a road or railway, and have accumulated in the course of years an enormously rich

[1] The first has been called the Kansas Period, the second the Iowa Period, these states marking the southern boundaries of each, respectively.

store of observations, in which the history of long-vanished periods can be read. These apparently insignificant layers of earth are the geologist's parchments and papyri, or, if they are for a time less easily decipherable, let us say his cuneiform inscriptions, from which he has to spell out the history of the glacial epochs.

As the sort of rock of which an erratic boulder consists is often sufficient to tell us whence it has come, so the gravel strata in Central Europe often show by their formation that they are moraines—sometimes terminal moraines, swept forward by the outer edge of an advancing glacier, sometimes ground moraines, or in other words such layers of rubble as we know can only have been formed underneath a vast ice crust.

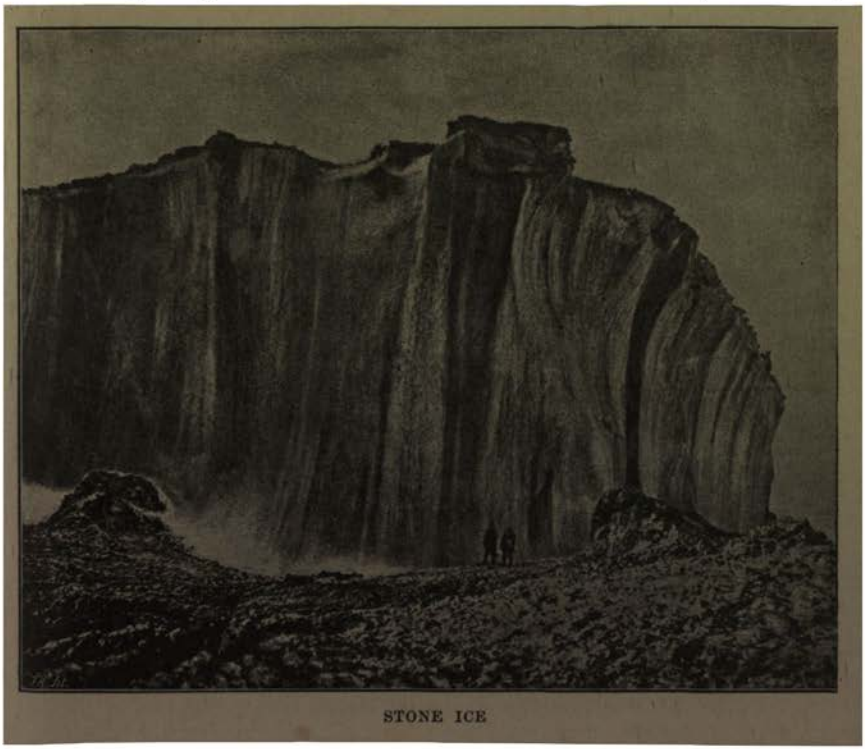
In many places in Central Europe there have been found, above ground moraines, strata containing bones of the lemming, Polar fox, reindeer, musk ox, wolverine, wolf, ermine, Polar hare, snow owl, &c., precisely the animals which in our times abound in the Siberian 'tundras'; while in other places, above the rubble of the moraines, vegetable remains have been discovered belonging to species now found in North Siberia and on the shores of the Polar Sea. Hence we draw the inevitable conclusion that after the land ice had deposited its moraines and retreated northward from Central Europe, the surface of the land gradually assumed the character of a tundra region. Above these tundra strata, again, are found other strata—of the peculiar sort of earth to which, in the Rhine Valley, has been given the name of *Loess*—containing remains of a rich fauna of animals peculiar to the steppes: the jumping hare, the jerboa in several varieties, the German marmot, the saiga antelope, the wild horse of the steppes (*dschæggetai*), the steppe lion,

and a great number of steppe rodents, as well as sand grouse, bustards, &c.; and together with these animals there still lived the mammoth. Thus Nehring's investigations enable us to conclude with certainty that, after the tundra period in Central Europe, a period ensued when there was as yet no great forest growth, when the plains formed a dry grass-covered steppe, with dust-storms in summer and snowstorms in winter, like the Asiatic steppes of to-day, and for the most part with the same fauna and flora as are now found on those high-lying treeless plateaux of Central Asia.

Not till later on did the climate grow steadily milder and the soil produce a rich forest growth, while the animals of the steppes withdrew to Central Asia, and were succeeded by a race of forest animals. Thus do the strata of the earth, by their formation and by the remains of animal and vegetable life they contain, record the course of these slow climatic changes, and bear witness to alternating glacial and temperate periods.

In this connection there have been few incidents of greater interest than the discovery of the famous Siberian mammoths. At several places in North Siberia there have been found bodies of the elephant of the Ice Age, the huge mammoth, with its hide and hair, its great marrow bones still full of marrow, and the contents of the stomach, consisting of pine-needles, still preserved—even, it is said, whole frozen mammoths with the soft parts still intact. Several expeditions, sent out by the Russian Academy, and Von Baer, Fr. Schmidt, and lastly, Baron von Toll, have succeeded in collecting a rich fund of evidence as to the conditions under which the mammoth existed. In many places on the Arctic coast of Siberia, and especially on the New Siberia Islands, Von Toll found extensive

deposits of dead ice, or 'stone ice,' which he holds to be nothing else than remains of a great sheet of land ice, which must once have extended over the whole of Northern Asia and right to the Pole; the New Siberia Islands and Sannikoff Land being, in his view, relics of a great Polar continent originally continuous with Asia. His theory is that,



STONE ICE

the climate being sufficiently cold, this ice must have remained unmelted ever since the glacial epoch. And on the top of the cliffs formed by this stone ice (which on Great Liakhoff Island, for example, attain a height of over seventy feet) is found a layer of frozen sand, mud and peat, with numerous remains of a vegetation, consisting of willow and alder (*alnus fruticosa*). Hence we may conclude (if Von

Toll's view of the formation of the stone ice is correct) that up here on the shore of the Polar Sea, at a period subsequent to that of the land ice, there was a climate so warm that the willow and alder could flourish in the thin layer of soil deposited by mud and water on the surface of the stone ice, yet not so warm as to melt the ice itself. The northern limit of vegetation of this kind is at present about four degrees of latitude (300 miles) farther south.

The mammoth, the woolly-haired rhinoceros, the musk ox, and a great many other Arctic animals flourished simultaneously with this vegetation. Animals killed by one chance or another—perhaps buried in a snowstorm, perhaps caught in some crevasse in the stone ice, which was subsequently filled with ice or snow—have been preserved for us, thanks to the constantly increasing severity of the climate, as butcher's meat is preserved at the present day.

In Scandinavia, too, the mammoth was at home. One small mammoth tooth found at Vaage in Gudbrandsdal shows that it must have lived upon an Arctic vegetation in our mountain districts. The mammoth and the woolly-haired rhinoceros are now extinct; but their contemporary, the musk ox, a living ghost from the glacial epoch, still drags out his melancholy existence in the most inaccessible regions of Northern Greenland, Grinnell Land, &c.[1]

The theory that Northern Europe, as far south as the foot of the Carpathians, must have been covered with an enormous mantle of land ice, in comparison with which even the Greenland ice sheet sinks into insignificance, was at first regarded as almost inconceivable, and, as it necessarily

[1] A section dealing in detail with the geological history of Scandinavia is omitted. (*Trans.*)

involved a total reconstruction of the dominant hypotheses, we cannot wonder that it met with long and fierce opposition. This opposition may now be considered a thing of the past, and there is scarcely any further controversy as to the fact of the glacial epoch, but only as to the precise explanation of the series of climatic changes which we group together under this common designation. A whole host of geologists have devoted themselves to the study of these glacial periods and their effects; and a vast literature, including special periodicals, daily contributes to the understanding of this remarkable episode in the history of our planet, which lies close behind us, geologically speaking (for the geologist reckons time on a great scale), yet which, until a few years ago, was utterly undreamt of.

Every day that passes adds to our realisation of the all-pervading significance of the Great Ice Age, until it has come to be reckoned among the 'critical periods' in the history of the earth's development, not less than in that of organic life.

In the first place, the aspect of great tracts of the earth's surface has undergone essential alteration, both in the old and the new worlds, through the action of the land ice and its marginal glaciers. Those fiords and lakes which are the glory of Norway, her wild alpine peaks, the contours of her valleys, in short, the whole surface-modelling of the country, has taken its final stamp from the action of the glaciers of the Ice Age, and the influence of the concomitant climatic conditions. And over all the low plain of Northern Europe, from the Danish islands and on to the foot of the Erzgebirge, the Riesengebirge, and the Carpathians, the soil virtually consists of matter transported from the north-east mountain regions by the action of the ice. Helland has estimated

that the surface of Scandinavia has been abraded and carried away to an average depth of about 80 feet from the original level as it existed at the beginning of the glacial period; that is to say, the country has been denuded of a layer 80 feet thick, which, in the form of sand and gravel and mud, has been deposited in the North Sea and over the North European plain. When one considers that these enormous masses of matter were for the most part gouged out, as it were, by the glaciers as they pursued their course down the valleys, one can easily understand that the contours of the valleys, and the very existence of the fiords and the lakes, must be essentially due to the action of the glaciers of the Ice Age. It is held, indeed, that fiords, being formed by the glacial excavation of pre-existing valleys, are to be found only in countries which have gone through a glacial period. We know that, before the Ice Age, in the tertiary period, a temperate climate, comparable with that of Central Europe and Northern Italy, prevailed in Spitzbergen and Greenland. Then comes the glacial epoch, and everything is covered with an interminable ice waste, where no living thing can possibly exist. Again and again temperate and Arctic climates alternate, by slow changes extending over (humanly speaking) endless periods of time. And when the whole series of alternations has been gone through, Europe and North America (and perhaps Northern Asia) have essentially changed their outward aspect, and particularly their fauna and flora. Before the Ice Age there lived in Europe and North America a large number of now extinct mammals, some of them of colossal size: the mastodon, the mammoth, and other gigantic members of the elephant tribe, extinct species of hippopotamus and rhinoceros, the elasmotherium, a huge beast of the rhinoceros type, the Irish elk, huge

varieties of the lion and the bear, and the machairodus, a ponderous beast of prey with dagger-shaped canine teeth, in comparison with which even lions and tigers must be regarded as mild and innocuous creatures. In South America lived the huge pachydermatous armadillo (*Glyptodon*), as big as an ox, an enormous sloth (*Megatherium*), and a multitude of other animals which have not survived the Ice Age. Wallace may well say: 'We live in a time in which the most gigantic, majestic, and singular forms of animal life have disappeared from the earth.'

But one mammal which, before the glacial epoch, had played no prominent part, although it had probably already made its appearance—to wit, the species known as man—survived the glacial epoch, and emerged from it victor over all the animal kingdom. Man's lordship over nature begins with the Ice Age, and many hold that it was in reality that period which made him what he is, and raised him above the brutes. The hard conditions of life sharpened and developed those special capabilities which fitted him to endure this series of climatic changes to which the gigantic animals of the tertiary period, his most formidable competitors in the struggle for existence, had gradually to succumb.

It is probable that, geologically speaking, we have as yet scarcely passed the threshold of this new era in the existence of the earth, the age of man, the psychozoic period; and the course of its further development is hidden from our eyes. But we now know, in outline, the manner of its beginnings; and the spirit of man will certainly insist on knowing, not in outline only, but in all possible detail, the history of that age which, even if it did not see the first man come into existence, at least saw the human race subjugate the earth—the great glacial epoch, the transition

period between the age of the great mammals and the age of man, one of the most interesting and important episodes in the story of the planet. Nor can we stop short at ascertaining the mere facts of this period; we must also insist, sooner or later, on understanding the causes of this series of climatic alternations, and fathoming the mystery of those ice shrouds which killed every living thing wherever their white expanse unrolled itself over land or sea. There is at the present moment scarcely any problem for the investigator—whether biologist or geologist—which can be said to lie nearer at hand, or to impose itself more insistently upon the inquiring spirit.

One of the first essentials towards the solution of this problem is a thorough examination of the regions where the conditions which obtain to-day are similar to those existing in Europe and North America during the glacial epoch. In Greenland with its ice mantle we have the closest analogy to Scandinavia during the first great extension of the land ice; and the investigation of the still unknown Polar regions cannot but furnish us with a whole series of new and indispensable contributions to the glacial theory. Herein lies the main significance of such exploits as Nansen's journey across the inland ice of Greenland and his present expedition to the North Pole. They supply us with data for the understanding of one of the most important periods in the earth's history, that which made man the ruler of the world.

CHAPTER X

NANSEN'S GREENLAND EXPEDITION—PREPARATIONS—PLAN—EQUIPMENT



'ONE winter evening in '87,' writes Dr. Grieg, 'I sat in my den at 3A Parkveien, absorbed in my work. Suddenly the door was flung wide open, and in stalked Nansen, with his long-haired, badly trained dog Jenny. Without pretending to be an authority on the subject, it is my opinion that Nansen is too absent-minded to be able to train good sporting dogs. The evening was cold, so that even Nansen had thrown his plaid over his shoulders. He sat down on the sofa just opposite me.

'"Do you know what I'm going to set about now?" he said. "I mean to have a try at crossing Greenland." And he set forth his plans with the aid of my old atlas, which I shall always associate with the memory of that evening. He was excited and wrought-up, and, at that stage, far from being certain, or even hopeful, of finding things go easily. I saw he wanted objections to discuss, and I supplied him with what occurred to me, though I knew nothing of the subject. "It would be easiest to make the crossing lower down, you understand," he said, "but the real thing will be to show the world that Greenland can be crossed so far north as this——" and he pointed out where he had at first planned to start. He little dreamed that this stretch of coast, which he treated so lightly that evening, would prove so hard a nut to crack. He said he was going to Stockholm. "What are you going to do there?" "To look up Nordenskiöld, and ask him to give me his opinion of my scheme. I shall just wait to take my doctor's degree in the spring, and then off to Greenland. It will be a hard spring, old man, but pooh! I shall manage it."

'Another friend had meanwhile dropped in. We all three walked to Skarpsno, we two every-day people making feeble objections, he meeting them with increasing warmth and with youthful emphasis of conviction. He would stake his life on the plan, and we should see it would all go smoothly. It was like a revelation, in these decadent days, to find a man of action ready to lay down his life for his idea. I was impressed and moved that evening when we parted.'

He went to Stockholm. It may be noted at this point that it was in 1886 that Peary and Maigaard, with their scanty equipment, had made a highly successful inroad

upon the Greenland ice field, intended, as Peary had expressly stated in his brief narrative, merely as a preliminary reconnaissance. Nansen had no time to lose if he did not want to be anticipated. Moreover, his zoological and anatomical labours were in the meantime at a standstill. His great essay on the histological elements of the central nervous system was finished, and could at any time be handed in as a thesis for his doctor's degree.

'When, on Thursday, November 3, 1887, I entered my workroom in the Mineralogical Institute of the Stockholm High School,' says Prof. Brögger, 'my janitor told me that there had been a Norwegian asking for me. He had not left a card, and did not say who he was. Compatriots without a name and without a visiting-card were no rarity. It was no doubt some one wanting me to relieve him from a momentary embarrassment. What did he look like? I said, with a touch of annoyance.

'"Tall and fair," answered Andersson.

'"Was he well dressed?"

'"He hadn't any overcoat," said Andersson, smiling confidentially, "he looked like a sailor, or something of that sort."

'Ah, yes—a sailor without an overcoat! No doubt the idea was that I should supply him with one. I saw it all.

'An hour or two later in came Wille.[1] "Have you seen Nansen?"

'"Nansen? Was that the name of the sailor? The man without an overcoat?"

'"Has he no overcoat? At any rate he's going to cross the Greenland ice sheet." And Wille rushed off—he was in a hurry.

[1] Now Professor of Botany at Christiania University.

'After that comes another of my colleagues, Professor Lecke, the zoologist. "Have you seen Nansen? Isn't he a splendid fellow? He has been telling me of many interesting discoveries about the sex of the myxine—and about his investigations of the nervous system too. Charming things! Splendid!"

'After all these preliminaries, Nansen at last appeared in person—tall and erect, broad-shouldered and powerful, yet with the grace and suppleness of youth. His rather rough hair was brushed back from his massive forehead. He came straight up to me and gave me his hand with a peculiarly winning smile, while he introduced himself.

'"You are going to cross Greenland?"

'"Well, I'm thinking of it."

'I looked him in the eyes. There he stood with the kindly smile on his strongly-cut, massive face, his complete self-confidence awakening confidence in others. Although his manner was just the same all the time—calm, straightforward, perhaps even a little awkward—yet it seemed as if he grew with every word. This plan—this snow-shoe expedition from the east coast—which a moment ago I had regarded as an utterly crazy idea, became, in the course of that one conversation, the most natural thing in the world. The conviction possessed me all of a sudden: he will do this thing, as surely as we are sitting here and talking about it.

'This man whose name I had never so much as heard until a couple of hours before, had in these few minutes—quite naturally and inevitably as it seemed—made me feel as though I had known him all my days; and without reflecting at all as to how it happened, I knew that I should be proud and happy to be his friend through life.

'"We'll go straight to Nordenskiöld," I said; and we went. With his singular dress—a tight-fitting, dark-blue, jersey-like blouse or jacket, closely buttoned up—he did not fail to attract a certain amount of attention in Drottninggatan (Queen Street). Gustaf Retzius, as I heard afterwards, took him at first for an acrobat or rope-dancer.

'Well, we hunted up Nordenskiöld, crossing the quiet, cloistral quadrangle of the Academy of Science, which has always something awe-inspiring about it.

'Nordenskiöld was in his laboratory, as usual at that time in the morning. We went through the anterooms filled with mineralogical specimens and cases. "These used to be Berzelius's quarters," I remarked to Nansen in passing. Lindström, the Professor's assistant, presently appeared, with both hands full of retorts and chemicals.

'"The old man is inside; he's up to his eyes in work," he whispered quietly to me.

'There, in the workroom, "old man Nor" was wandering around among his minerals. I can never see his strong, broad back, without thinking of a story in connection with his boat expedition up the Yenisei in 1875. At one point, where the seas repeatedly threatened to swamp the boat, Nordenskiöld took his seat on the after gunwale, and let the ice-cold waves break on his broad back. There he sat for hours, doing duty, in a literal sense, as a breakwater. Of such stuff are Arctic explorers made.

'I greeted Nordenskiöld and performed the introduction. "Curator Nansen, of Bergen. He intends to cross the Greenland ice sheet——"

'"Good heavens——!"

'"And he would like to consult you upon the matter."

'"I'm delighted to see him. So! Mr. Nansen intends to cross Greenland?"

'The bombshell had fallen. The friendly, amiable, but somewhat absent expression he had worn an instant before had vanished, and his liveliest interest was aroused. He seemed to be scanning the young man from head to foot, in order to see what sort of stuff he had in him. Then he burst out with a twinkle in his eye: "I shall make Mr. Nansen a present of a pair of excellent boots! Indeed, I'm not joking; it's a very important and serious matter to have your foot-gear of the best quality."

'The ice is broken. Nansen expounds, Nordenskiöld nods a little sceptically now and then, and throws in a question or two. He no doubt regarded the plan—at least so it seemed to me—as foolhardy, but not absolutely impracticable. It was obvious that Nansen's personality had instantly made a strong impression on him. He was at once prepared, in the most cordial manner, to place the results of his own experience at the young man's service.

'There were of course numbers of details to be gone into: the Lapplanders, snow-shoes, sledges and boats—and then the question whether the drift ice could be crossed as Nansen had planned. But "the old man was up to his eyes in work," and it was agreed that Nansen should come again. Meanwhile, we were to meet the same evening, at the Geological Society. As we were leaving I said aside to Nordenskiöld, "Well, what do you think? I back him to do it."

'"I daresay you're right," answered Nordenskiöld. But the sceptical expression was again to the fore.

'After the meeting at the Geological Society, Nansen accompanied me home. It was pretty well on in the evening. While we were sitting talking, he genial and at his ease, I

quite absorbed in all these new ideas, there came a ring at the door, and in walked Nordenskiöld. I at once saw that he was seriously interested.

'We sat there till the small hours, discussing Arctic and Antarctic explorations in general, and the Greenland expedition in particular. It was only four years since Nordenskiöld himself had made his last expedition on the Greenland ice sheet; and he was at this time, if I remember rightly, much interested in arranging a combined Australian-Swedish Antarctic expedition, in which his promising son, G. Nordenskiöld,[1] who unfortunately died so early, was to have taken part.

'I was going the next day to the usual Fourth of November banquet at the house of the Norwegian Secretary of State, and I asked Nansen if he would care to have an invitation. No, he couldn't well appear on such an occasion —he had only the clothes he was wearing.

'"But Mr. Nansen can come and dine with me, just as he is," suggested Nordenskiöld with frank cordiality; and so it was arranged.

'I cannot say whether Nansen, when he returned to Christiania, a couple of days later, took with him the "excellent boots," though I know that Nordenskiöld afterwards sent him a pair of snow-spectacles. But, boots or no boots, he certainly took back with him many a valuable hint, and the assurance of complete sympathy on the part of the great explorer. When, nearly two years later, they again met in Stockholm, the foolhardy plan had been carried out, and the journey over the inland ice from coast to coast was an accomplished fact.'

Nansen's application to the *Collegium Academicum* for

[1] Three years later this young man undertook an expedition to Spitzbergen.

the means to carry out the expedition is dated November 11, 1887. The very first sentence goes straight to the heart of the matter: 'It is my intention next summer to undertake a journey across the inland ice of Greenland from the east to the west coast.' The amount he asked for was 5,000 crowns (less than 300*l.*). It is so infinitesimally small in comparison with the magnitude and importance of the undertaking, that one cannot speak of it now without a smile. But as yet the project was only a project, and the projector an untried man. The faculty and the council warmly recommended the scheme to the Government. But the Government could not see its way to sanctioning it. One of the official organs was unable to discover any reason why the Norwegian people should pay so large a sum as 300*l.* in order that a private individual might treat himself to a pleasure-trip to Greenland. And undoubtedly the Government here represented a very large section of the people. Two widely different sides of the Norwegian character were in this case at odds. The love of adventure is represented in Nansen, the cautiousness, the 'canniness,' of the Norwegian peasant is represented in the Government. It is no mere chance that this 300*l.* should have come from abroad. For except in scientific circles, and among the young and ardent, the general opinion certainly was that Nansen's undertaking was only worthy of a madman—though no one actually went so far as to have him locked up, like the man in the London madhouse whom Nansen is so fond of citing. A comic paper in Bergen inserted the following advertisement:

NOTICE.—In the month of June next, Curator Nansen will give a snow-shoe display, with long jumps, on the Inland Ice of Greenland. Reserved seats in the crevasses. Return ticket unnecessary.

And in private conversation the affair was taken much in the same way, when it was not regarded from a more serious point of view, by people who thought it sinful to give open support to a suicide.

Nor was it only the outside public that held these opinions. Previous explorers of Greenland, who might be supposed to know the local conditions, characterised the plan as absolutely visionary. Nansen has himself reprinted in his book a short extract from a lecture delivered in Copenhagen, by one of the younger Danish explorers of Greenland. He says: 'Among the few of us who know something of the nature of Danish East Greenland, there is no doubt that unless the ship reaches the coast and waits for him till he is forced to confess himself beaten, it is ten to one that either Nansen will throw away his own life, and perhaps the lives of others, to no purpose; or else he will be picked up by the Eskimos, and convoyed by them round Cape Farewell to the Danish stations on the west coast. But no one has any right needlessly to involve the East Greenlanders in a long journey, which must be in many respects injurious to them.'

It was, however, from Denmark that the requisite financial assistance came. Professor Amund Helland, who had himself been in Greenland, had strongly advocated the plan in the *Dagblad* of November 24, 1887. 'After the experiences of others on the inland ice,' he says, 'and after what I myself have seen of it, I cannot see why young and courageous snow-shoers, under an intelligent and cautious leader, should not have every prospect of reaching the other side, if only the equipment be carefully adapted to the peculiar conditions. . . . All things carefully considered, I believe there is every likelihood that competent snow-shoers

should be able to manage this journey without running any such extreme risks as should make the expedition inadvisable. Those who have travelled some distance on the inland ice of Greenland number, at present, about twenty men, and not a single life has been lost in these attempts.'

As a result of this article, Professor Helland was able to announce to the *Collegium Academicum*, on January 12, 1888, that Mr. Augustin Gamél, of Copenhagen, had offered to provide the 5,000 crowns.

Nansen accepted the generous offer. Afterwards, when all was happily over, people criticised this action. He ought to have waited patiently till the money turned up somewhere in Norway. This wisdom after the event is foolish enough. It ignores the actual facts of the situation. Nansen had made up his mind to pay for the whole enterprise out of his own pocket; no one in Norway showed the slightest eagerness to prevent his doing so. And, with all his self-reliance, he could not, at that time, regard the realisation of his idea as a privilege that must be reserved solely and exclusively for Norway. The situation was quite different when, five years later, with the eyes of all the world upon him, he set out for the North Pole. Then, indeed, it was of the utmost importance that the money as well as the flag should be Norwegian. The criticism seems all the emptier when we remember that the Greenland Expedition did not cost 5,000 crowns, but more than three times that amount, and that Nansen himself would have met this deficit out of his small private means, had not the Students' Society, after the successful return of the expedition, set on foot a subscription which brought in 10,000 crowns.

It was, as Nansen had said to Dr. Grieg, a hard spring.

The first six months of 1888 passed in one incessant rush. At the beginning of December 1887 he is back in Bergen. At the end of January, he goes on snow-shoes from Eidfiord in Hardanger, by way of Numedal, to Kongsberg, and thence to Christiania. In March he is in Bergen again, lecturing on nature and life in Greenland. One day—or rather night—we find him camping on the top of Blaamanden, near Bergen, to test his sleeping bag, and a week later he is on the rostrum in Christiania giving his first trial lecture for his doctor's degree, on the structure of the sexual organs in the myxine.[1] On April 28, he defends his doctorial thesis: *The Nerve Elements: their structure and connection in the central nervous system*—and on May 2 he sets off for Copenhagen, on his way to Greenland. 'I would rather take a bad degree than have a bad outfit,' he used to say to Dr. Grieg in those days. He succeeded in getting both good, but only by straining every nerve. On the one hand he had his scientific reputation to look to, on the other, his own life and the lives of five brave men; for he was fully convinced that, of all the dangers which were pointed out to him, the most serious by far was the danger of a defective outfit. On the outfit, more than on anything else, depended victory or defeat, life or death.

It was in the January number of the periodical *Naturen* (1888) that he for the first time made a public statement of his plan. He explains that by striking inland from the east coast, he will need to cross Greenland only once. It is true that by this course retreat is cut off. 'The inhospitable coast, inhabited only by scattered tribes of heathen Eskimos, is by no means an enviable winter residence to fall back

[1] The subject of the second lecture was: 'What do we understand by alternation of generation, and in what forms does it occur?'

upon in the event of our encountering unforeseen obstacles in the interior; but the less tempting the line of retreat, the stronger will be the incentive to push on with all our might.' This is one of the essential points of the plan—all bridges are to be broken. Here we see the irresistible self-confidence of genius—its triumphant faith in its power to reach the goal. The thing that presents itself to ordinary prudence as the first necessity, namely, a safe and easy line of retreat, genius regards rather as a hindrance and a thing to be avoided.

> Setzet Ihr nicht das Leben ein,
> Nie wird euch das Leben gewonnen sein.

We will not here dwell upon the other features of the plan, because in all essentials it was carried out as projected; and the modifications which proved necessary are sufficiently well known through Nansen's own account of the expedition. It will be remembered how they were caught in the drift ice, carried down almost to the southern point of Greenland, and then had to fight their way laboriously north again. It will be remembered, too, that they did not strike inland, as they intended, north of Cape Dan, but a good way farther south, and that they reached the west coast, not, as contemplated, on Disco Bay near Christianshaab, but at the Ameralikfiord near Godthaab. These alterations are important enough in themselves, but inessential in relation to the main object. The plan itself having been set forth, the article proceeds to enumerate the scientific problems which may be solved or brought nearer to a solution by a journey across the inland ice. Nansen concludes by quoting Nordenskiöld's words in the preface to his book, *The Second Dickson Expedition to Greenland*: 'The investigation of the unknown interior of Greenland is fraught with such momentous issues for

science that at present one can hardly suggest a worthier task for the enterprise of the Arctic explorer.'

Nansen was himself fully conscious of the great scientific import of the journey he was about to take.

For the rest, this expedition required in its leader a quite unusual combination of qualities; an adventurous imagination to conceive it, a Viking-like hardihood to carry it through, strenuous physical training throughout childhood and youth to enable him to face its fatigues, and self-sacrificing devotion to science in order to make the most of the opportunities it afforded. And even more was required. This young man, whose fame as yet rested entirely upon an unfulfilled idea, had to take command of a little group of brave men who all risked their lives exactly as he did, and among whom were some who themselves had held command. This was not a company of soldiers to be officered as a matter of course; it required a special tact, a peculiar instinct, to bear oneself as *primus inter pares*. With all his proud self-confidence, Nansen had just this instinct. It springs in part, no doubt, from a strain of gentleness in his character, but may on the whole be regarded as simply another manifestation of his singular knack of doing the right thing at precisely the right moment. He had been too early intent on ends of his own to develop what one would call a specially social disposition. 'He is something of a soloist,' one of his friends writes to us, 'steadfast towards those to whom he really attaches himself; but they are not many.' He is too absorbed in his work. He is not expansive, in the sense of feeling any inborn craving to make friends. But now, in the moment of need, the unaffected geniality of his temperament comes out quite naturally in his relation to those who have had the courage

and the insight to place their trust in him. Given another personality than his, the whole undertaking would not improbably have gone to wreck, with the most disastrous consequences. If it had been simply a question of mechanical discipline, the spirit of revolt might easily have arisen in the course of these indescribable hardships, and ruined everything. As it was, all were agreed that, though discussion should of course be free, one must have the decisive voice. But that one was of no higher rank than the others when there was work to be done or hunger to be endured; and it was this complete equality that formed the strongest bond of union. Stories have been invented as to the relations between the six Greenland explorers, some of them of a dark and almost tragic tenor. We are able to state on the best authority that all these legends, from first to last, are the product of popular imagination, which, after the tremendous enthusiasm over Nansen's return, necessarily underwent a reaction.

The men who accompanied Nansen were Captain Otto Neumann Sverdrup, born October 31, 1855, in Bindalen; Lieutenant Oluf Christian Dietrichson, born May 31, 1856, in Skogn, near Levanger; Christian Christiansen Trana, born February 16, 1865, at the farm of Trana, near Stenkjær; besides the two Lapps, Samuel Johannesen Balto, aged 27, and Ola Nilsen Ravna, aged 45. All these names have become historical. To the two first-mentioned in particular a great share in the credit of the expedition is due. The whole civilised world is indebted to them, and Nansen most of all. 'People are very ready,' he says in the preface to *The First Crossing of Greenland*, 'to heap the whole blame of an unsuccessful expedition, but also the whole honour of a successful one, upon the shoulders of the leader. This is particularly

unfair in the case of such an expedition as the present, where the result depends on absolutely no one falling short, on every one filling his place entirely and at every point.'

For the lives of all these men Nansen had now assumed the responsibility, so far as the planning and management of the journey was concerned; and his responsibility began with the outfit. With regard to this essential matter, all the qualities we have been dwelling upon would have been of no avail, had he not possessed one other, of the first importance. He was accustomed to see things for himself. He was an observer not only in the domain of science, but also in that of practical life. As a boy, he pulled the sewing machine to pieces to see how it was made, and as a young man he had gone deeply into the question of the nutritive value of the various food-stuffs. He had an eminently practical and mechanical talent; and he had been born with the instinct of the Youngest Son in the fairy tale, for picking up a magpie's wing whenever he came across it, since you never could tell when it might come in useful. No doubt he had learnt much in his brief consultations with Nordenskiöld, whose numerous expeditions had always been conspicuous for their careful and excellent equipment. But the expedition now in hand must be set about on an entirely original plan, since they were to have neither reindeer nor dogs, but were themselves to be their own beasts of burden and drag every crumb of food and every instrument. Now was the time to act up to the Nansen motto 'To require little.' The thing was to ascertain what food-stuffs combine a maximum of nourishment with a minimum of weight; and equally important was the consideration of the means of transport to be employed. The lightness of everything was the cardinal point which distinguished the Nansen expedition

from all others. Lightness became a study, an art. Nansen brooded on the problem by day, and dreamt of it at night. Like Macbeth, he was haunted with visions of insubstantial *tolleknivs* (sheath knives).

Everything was minutely criticised, from the raw material up to the finished product. Many of the most important articles Nansen designed for himself. From his detailed description of the outfit we reproduce in a few words the essential points:—Five specially constructed hand-sledges of ash, with broad steel-plated runners. These sledges were about 9 ft. 6 in. long by 1 ft. 8 in. broad, yet weighed, with the steel runners, only a little over 28 lbs. They were so excellently made that in spite of the tremendous wear and tear they were subjected to not one of them broke. Next came Norwegian snow-shoes (*ski*) of the most careful make, as well as Canadian snow-shoes and Norwegian wickerwork *truger*. The last were used particularly in ascending the outer slope of the inland ice, and on wet snow where *ski* were useless. The tent was furnished by Lieutenant Ryder, of Copenhagen. It was just large enough to accommodate the two sleeping-bags side by side upon the floor. The dress of the party consisted of a thin woollen vest and woollen drawers; over the vest a thick Iceland jersey; and for outer garments, jacket, knickerbockers and thick snow-socks on the legs, all made of Norwegian home-spun. For windy and snowy weather they had an outer dress of thin sail-cloth. Their foot-gear consisted of boots with pitched seams and Lapland *lauparsko*, a sort of moccasin. On their heads they wore woollen caps and hoods of home-spun, woollen gloves on their hands, and in extreme cold an extra pair of dogskin gloves. For their eyes they had snow-spectacles, some of smoke-coloured glass with baskets of

steel-wire network, some of black wood with horizontal slits.

The provisions consisted mainly of pemmican, meat-powder, chocolate, calf-liver pâté, a Swedish biscuit known as *knäkkebröd*, meat biscuits, butter, dried halibut, a little cheese, pea-soup powder, chocolate, and condensed milk. They took two double-barrelled guns for replenishing their larder. The cooking apparatus was a spirit-burning contrivance devised by Nansen and a chemist named Schmelck, upon which they expended much labour. No spirits for consumption; some tea, a little coffee, a little tobacco. On the other hand, an abundance of scientific instruments. And, to complete the list, tarpaulins, which on the inland ice were sometimes used as sails; bamboo poles; and a quantity of tools and small necessaries of various kinds, from matches and a few candles, down to darning needles—everything of course as light as possible.

In only one single respect did this equipment prove inadequate. The pemmican, which should have been the staple of their diet, had in the course of manufacture been deprived of all fat, and Nansen did not discover the fact until the last moment. The result was that they suffered after a while from 'fat-hunger, of which no one who has not experienced it can form any idea.' Even during the last days, when they had as much dried meat as they wanted, they did not feel satisfied.

How easy it would have been in this *terra incognita* for the outfit to have fallen short in other respects! For one thing, no one in the least foresaw that the expedition would, at this time of the year, be exposed to such severe cold as was found to prevail on the inland ice. It was a new and unknown meteorological phenomenon which the expedition encoun-

tered. If Nansen had chosen woollen sleeping-bags instead of those of reindeer-skin which he at last determined on, he and his comrades, as he himself admits, would scarcely have reached the west coast alive.

Yes, a great deal might have happened; but luck was on Nansen's side. His good genius was very active in all that concerned this, his first great undertaking. But in the last analysis, no doubt, the man who has 'the luck on his side' is he who shows capacity, foresight, genius, and does not pit himself against forces which are in the nature of things unconquerable.

We cannot conclude these lines on the preparations for the Greenland expedition without mentioning that Nansen was in constant communication with one of the most notable of the explorers of Greenland, Dr. H. Rink. One service that Rink certainly rendered him was to throw into strong relief the perils of the expedition, although there were moments when the enfeebled and nervously conscientious old man reproached himself with not having dwelt on them sufficiently. 'Rink at first regarded the plan,' his wife writes to us, 'as a mere romantic fancy. And the more he pondered it, and the more he became attached to the man who was to carry it out, the more perilous did it become in his eyes, until at last he blamed himself severely for not having, in the course of all their discussions, painted in strong enough colours the dangers to which he believed the expedition would be exposed. So, expressly on this account, we invited Nansen to pay us another visit. That evening we spent for the most part in looking at pictures of Greenland, in a quieter and more serious frame of mind, on the whole, than on previous occasions, when there had been a vast amount of jesting over the chances (cannibalism not

excepted) that might befall the expedition on the ice fields. On these occasions everybody used to laugh very heartily, except Rink. And I remember I had to bear all the blame of this unseemly conduct after the party broke up.'

In Rink's house, too, they used to take lessons in Eskimo, when time permitted. Sverdrup tried it first; but he could not get his tongue round the Greenland idiom. Dietrichson was good at it. 'Curiously enough,' writes Mrs. Rink, 'I had pitched upon these two as the predestined spokesmen of the expedition, and did not offer to give Nansen any lessons. Whereupon he said, as though a little hurt: 'Mayn't I try too?'—and he went at it with the earnestness and perseverance that are such charming traits in his character. How remarkably he succeeded in picking up the language, the Eskimos themselves bear witness.'[1]

The last evening Nansen was at Rink's house, Mrs. Rink accompanied him to the door. 'I said,' she writes, 'what had often occurred to me, "You must go to the North Pole, too, some day." He answered emphatically, as though he had long ago made up his mind on the point, "I mean to."'

[1] See Chapter XVII.

CHAPTER XI

ACROSS GREENLAND

On May 2, 1888, Nansen started from Christiania, by way of Copenhagen and London, for Leith, where he was to meet the rest of the party, who had gone, with the whole outfit, from Christiansand direct to Scotland.

From Scotland they proceeded to Iceland by the Danish steamer *Thyra*. Not until June 4 did they join the sealer *Jason* (Captain M. Jacobsen) which was to carry them over to the east coast of Greenland—under the express stipulation, however, that the vessel should not be hindered in its sealing operations for the sake of landing the party.

On Monday, June 11, they had their first glimpse of the east coast of Greenland, sighting the high rugged peaks north of Cape Dan at about the latitude where, in 1883, Nordenskiöld had succeeded in getting through the drift ice with the *Sophia*. The ice belt between the vessel and the coast proved, however, to be still so wide (from nine to ten miles of rough ice) as to render any attempt to reach the land unadvisable for the present. They had to wait about a month for a favourable opportunity of leaving the *Jason*, which was bound to remain in the region where the seal-hunting was likely to be good. Meanwhile, Nansen acted as 'doctor' to the whole fleet of sealers, and had to possess his soul in patience until the sealing season was practically over.

Finally, on the morning of July 17, the *Jason* was so near land (about 2½ miles from the coast near Sermilikfiord, at 65½ N. lat.) that Nansen determined to force a passage through the comparatively narrow belt of drift ice.

The boat belonging to the expedition, and a smaller one which the captain of the *Jason* had placed at their disposal,



THE MEMBERS OF THE GREENLAND EXPEDITION

were therefore lowered, the baggage packed and stowed in the boats, and every preparation promptly made. At 7 P.M. all was ready for a start. Nansen went up into the crow's-nest for a last survey of the course, and saw plainly, with the aid of the glass, a belt of open water between the drift ice and the shore.

'We are taking to our boats with the firmest hope of a

successful issue to our enterprise,' Nansen wrote in a letter to the *Morgenblad*, hastily scribbled at the last moment.

It was soon apparent that their hopefulness was, at the very outset, to be put to a severe test. After they had tried the whole night long, in storm and rain, to get through the drift ice opposite the mouth of the Sermilikfiord, the ice became so packed by the current that, in the early morning, they had to drag their boats up on the floes. One of the boats was injured by the pressure of the ice, so that it had to be repaired in hot haste; and during the short time lost in doing this they were caught in a strong southerly current, and swept seaward again at a great speed. At 6 o'clock on the 19th they found that they were already twice as far from land as when they had left the ship.

There was nothing for it but to drift southward with the ice until an opportunity should offer of getting in under the land again.

For ten days the expedition drifted along the east coast of Greenland as far down as the island of Kudtlek, 61° 40′ N. lat., at an average rate of nearly six knots in the twenty-four hours. Quite apart from the very serious dangers to which Nansen and his comrades were exposed during this drift voyage, the expedition was carried a long way from its projected starting-point, and had lost a great deal of very precious time. It was not till July 29 that they succeeded in setting foot on dry land, and thus the best part of the summer was already gone.

Nansen has given a vivid description of this interesting drift voyage, and of life on the ice floe which, tossed about by the waves and breakers, and repeatedly cracked and broken, was yet the abiding-place of the expedition during all these days. With the mountains of the coast so near

that in bright weather they could clearly distinguish their outlines, they were steadily borne southwards, further and further from their goal.

The night of July 20 might easily have been their last. The ice floe on which they were drifting had come right out to the verge of the open sea, which was running very high, so that the surf kept on washing over the floe almost up to the tent. Had the floe been crushed, they might very likely have found it impossible to launch the boats in such a furious sea, and among the clashing masses of ice. In any case they could not have saved more than one of the boats, and the most indispensable part of the provisions and equipment. One scarcely knows which to admire the most —Sverdrup, who kept the night watch, pacing calm and composed, with his quid in his cheek, up and down the floe, between the tent and the boats, many times on the point of loosening the hooks of the tent-flap to make them all turn out, but always staying his hand—or Nansen and Dietrichson, who lay quietly asleep in the tent, while the surf roared and rattled the ice-brash over the rocking floe, and swept ever nearer and nearer until it lapped the very edge of the tent. But just as the outlook was blackest, the floe suddenly changed its course, headed shorewards once more 'as if guided by an unseen hand,' and was soon in safer waters.

Nansen and his companions had a hard time of it during these perilous, exciting days on the ice floe. They did not so much mind their toil in the rain and surf, fruitlessly striving to force a passage through openings in the ice pack; they did not so much mind their scanty diet of raw horseflesh, &c. (the cooking apparatus was only once lighted during their days of drifting); they did not so much mind the dangers that threatened them on every hand; but they

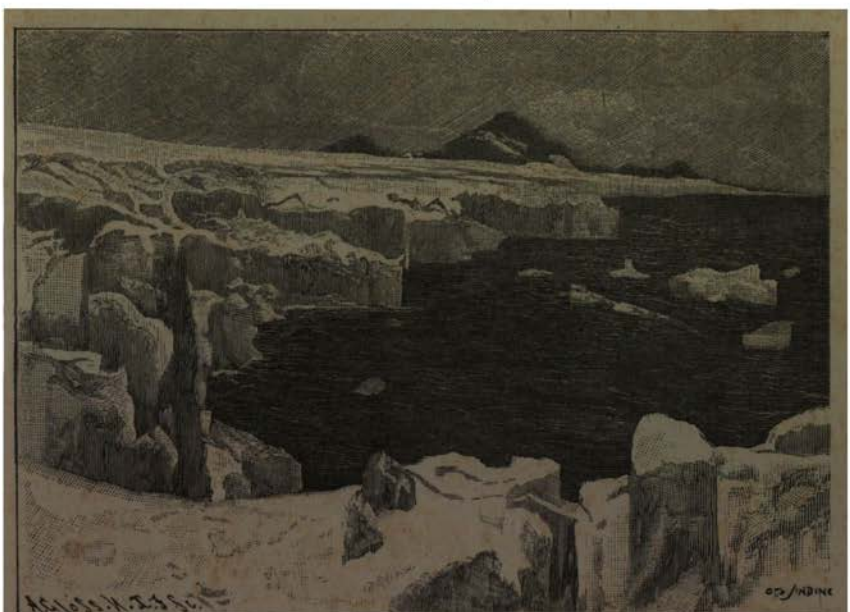
dreaded the prospect of having to give up for that season the journey across the inland ice. These wasted days were trying days indeed.

When the news of the success of the expedition reached Stockholm, Nordenskiöld pointed out, as the strongest proof of the admirable energy displayed during the entire journey, that when at last they had got through the belt of drift ice they instantly set to work to row northwards again, in order to reach the proper point for attacking the ice sheet. They had, in a way, made an unfortunate and discouraging start. It was already well on in the summer, the supply of provisions was not over-abundant, and—civilisation was, moreover, within temptingly easy reach. They were now only 180 miles from the nearest colony, Frederiksdal, while the Sermilikfiord, the starting-point originally fixed upon, was nearly twice as distant. The mere fact of their resisting the temptation to put off till the following year may be called truly heroic; not many would have shown such resolution. But for them the temptation was no temptation at all. It did not enter their thoughts that there was anything to be done except to head the boats northwards as quickly as possible. And it was not with anxious fear, but with radiant joy that they now saw a clear water-way before them.

The first problem, that of getting through the drift ice with whole skins, was thus solved—with great labour, it is true, and loss of precious time, but nevertheless solved. It had been prophesied that even this would prove impracticable; for a long series of vain attempts had shown that it was next thing to impossible to penetrate the ice belt south of the sixty-sixth degree of latitude. Not until 1883 had Nordenskiöld, with the steamer *Sophia*, succeeded in

reaching the coast near Cape Dan (King Oscar's Haven). So much the more daring was it on Nansen's part to make the attempt.

But now the thing was to make all speed northward. The best of the summer was gone. If they were to have any chance of reaching the west coast that year, they must go at it in earnest. And they did go at it in earnest.



PUISORTOK

On the day of their landing at Kekertarsuak they had a lordly repast of hot chocolate and extra rations of oat cake, Swiss cheese, mysost (goat's milk cheese), and cranberry jam, to celebrate their landing; but after that their meals consisted of cold water, biscuits, and dried beef—they could not waste time in cooking until they had in some measure made up what they had lost in the ice drift. It was a toilsome journey by boat northward along the coast. For long

distances they had to exert all their strength to force the ice floes apart in order to get the boats through the narrow channels between them; and sometimes they had to drag the boats over the ice, skirting the low barren coast, with glaciers and snow fields coming right down to the margin of the sea. They got safely past the dreaded glacier Puisortok (near it, at Cape Bille, they came upon an encampment of heathen Eskimos, of which Nansen has given a highly interesting description), and they forced their way with the greatest difficulty through a closely packed belt of drift ice south of Ingerkajarfik. At Mogens Heinesens Fiord the appearance of the coast altered. From this point northward there is a long stretch of bare coast-land, with a view of high mountain ranges, 'summit on summit, and rank behind rank.'

By dint of constant battling with the drift ice and the current, the expedition reached Nunarsuak (62° 43′ N. lat.) on August 3. From this point they tried to sail, but the wind soon rose to a tempest which was near proving fatal, for the boats were on the point of being crushed between the ice floes, got their oars and thole-pins smashed, and were separated into the bargain. It was a hard pinch, but by putting forth all their strength they got through it at last, and the tent was pitched on a patch of soft greensward on Griffenfeldt's Island, for the highly needful repose after an exhausting day. A feast of splendid hot carraway soup, 'never to be forgotten,' was the reward of their toils.

On August 5 the boats narrowly escaped being crushed by the falling of a fragment of an iceberg, and 'after almost incredible labour' they reached in the evening an islet at the mouth of the Inugsuarmiutfiord, where they intended to rest for the night. But from here they perceived that

the water was open ahead, the fiord lying smooth as a mirror; so their rest had to be adjourned. Forward again! They certainly did 'go at it in earnest.'

At Singiartuarfik, on August 6, they again fell in with Eskimos. Then northward again, now in open water, now fighting with drift ice, always on cold dry diet which was served out, moreover, in very scanty rations. They were never really satisfied, not even directly after eating; but Nansen 'said they had had enough, so enough it had to be,' as Christiansen put it. To the Lapps, who naturally had no very clear notion beforehand of what they had embarked upon, this perpetual fighting with drift ice, and fasting on top of it, began to seem rather depressing.

The coast now became less precipitous again, and the mountain contours rounder, and the explorers began to think of landing and beginning their journey proper. On August 8 they reached Bernstorff's Fiord (Kangerdlugsuak) at about 63½° N. lat. The fiord was brimful of glacier ice, many of the huge icebergs rising out of the water to a height of over two hundred feet (six or seven times as much being under water), and running to a mile or so in breadth, sometimes flat-topped, sometimes jutting forth into the most fantastic peaks, pinnacles, and crests. These colossal masses were so innumerable that they threatened to bar all advance. From the top of one of them the eye ranged over an 'alpine world of floating ice.'

At last chinks were discovered even in this barrier—open channels 'with a narrow strip of sky visible between high walls of ice.' And 'although huge icebergs more than once collapsed, or capsized with a mighty crash, and set up a violent sea-way,' here, too, they at last got out of their difficulties for the moment. That night they slept in the sleeping-

bags alone, upon a rock so small that there was not room to pitch the tent.

In a more and more open water-way they pressed on northwards, with masses of ice breaking off from the glaciers and icebergs on every side. On August 9, while they were in the act of forcing asunder two floes, among a number of icebergs, a huge piece of an iceberg fell down with a mighty crash upon the floe they were standing on, smashing it and violently churning up the sea. 'Had we gone to that side a few moments earlier, as we originally intended, we should almost certainly have been crushed to death. It was the third time such a thing had happened to us,' Nansen says in his account of the expedition, characteristically describing it as 'an odd occurrence.' Well may it be called 'odd'! How does it happen that some men come safe and sound through all such adventures; go voyages on ice floes and sleep undisturbed while the surf is on the point of breaking up the fragile barrier between them and eternity; row in boats under toppling icebergs, and get clear of them two minutes before they fall; plump into fissures in the inland ice at the very points where their arms and their alpenstocks can save them; row for days in dangerous waters in nutshell boats improvised out of sail-cloth, and get in just in time to escape storms and certain destruction; sleep on the ice in a temperature of −45° C. (−49° Fahr.) without freezing to death; fall into the ice-cold water half a score of times not only without drowning, but without so much as taking cold; lead a dog's life of toil and hunger for months at a stretch, and come out none the worse for it; while others —alas! one has no heart to insist on the contrast. But truly it may well be called 'odd'!

Let us admit that ninety-nine hundredths of this 'devil's

own luck' is due to having an eye on every finger, so to speak—is due to the sound mind in the sound body—to the alert capacity of genius—to the indomitable energy of the man with a vocation. Granted all this, how are we to account for the remaining hundredth?

These Greenland explorers are in league with destiny!

When Njaal and his sons were hard bestead, Njaal would have had them give in; and one of the sons agreed with him that that was 'the best they could do.' Whereupon Skarphedin answered: 'I am not so sure of that, for now he is fey.' The Saga-man would have us understand that he who is 'fey,' who is marked for death, has no longer complete control of his will and his intelligence.

These young men were not 'fey' in any sense of the word.[1]

They now pressed forward in tolerably open water past the glacier-bound coast near Gyldenlöve's Fiord and Colberger Heide, and at last, at eight o'clock in the evening of August 10th, in a thick fog, they made their final landing on the north side of Umiviksfiord. They were now done with the boats, and were overjoyed to haul them up on land, Nansen meanwhile making the coffee 'for the second hot meal in twelve days.'

After Nansen and Sverdrup had assured themselves, by a laborious reconnaissance on the 11th of August, that it was possible to make the ascent of the inland ice from Umivik, the following days were devoted to all kinds of repairs of foot-gear, sledge-runners, &c., the final packing of the baggage, and, in short, the most careful preparation for the

[1] The word in the original is 'feig,' which means not only 'fey,' but 'cowardly.'

journey that lay before them. During all these days the weather was mild and calm, with a great deal of rain—weather in which it would not in any case have been advisable to make a start.

At last, at nine in the evening on August 16th everything was in order for the ascent. The baggage was stowed on four sledges each carrying about 220 lbs., and a fifth, somewhat larger sledge, carrying about double that amount. This last was therefore drawn by two men, Nansen and Sverdrup.

The ascent of the ice was very steep, so that their progress was slow, and, although they at first travelled by night, the surface was soft. The ice was full of crevasses, yet not so difficult but that they could manage to get across them. It rained a good deal, too, so that they were wet to the skin. For three days and nights, from noon on the 17th till the morning of the 20th, the weather was so execrable, with torrents of rain and wind, that there was nothing for it but to keep to the tent. They were not very agreeable days, especially as the supply of provisions was so small that Nansen decided that one meal a day must suffice while they were doing nothing.

On the 20th they were able to start off again. It was frightfully slow going, over the steep surface, full of rents and fissures. On the 21st it cleared up, and there was frost enough to make the snow firmer. From that day till they reached the west coast they found no drinking water anywhere, and consequently suffered from a burning thirst. While on the march they got nothing to drink but just what they could melt by the warmth of their own bodies. They filled small flat pocket-flasks with snow and carried them in their breasts, often next the skin, until the

snow was melted. In such intense cold as they encountered later, these were hard-earned drops.

When they turned out at two o'clock on the morning of the 22nd, they found a frozen surface. They were now at a height of about 3,000 feet, and thought they had got over the worst of the ascent. But the ice was still very uneven, and the labour of dragging along the heavy sledges was terrible—'the strain on the upper part of the body was very trying, and our shoulders felt as if they were burnt by the ropes.'

From the 24th onwards they travelled by day. The cold now began to increase rapidly. Nevertheless, except for a single day, the surface was still, as a rule, extremely heavy, on account of the loose snow into which the sledges sank deep; and on the 26th they had, in addition, a regular snowstorm. The ascent was still so steep (a gradient, sometimes, of 1 in 4) that it would often take three men to pull each sledge, so that they had to cover the ground several times over. No wonder that Christiansen, who, as a rule, never opened his mouth, should have said to Dietrichson after one of these return journeys: 'Good Lord! to think of people being so cruel to themselves as to go in for this sort of thing.' The expedition had then reached a height of about 6,000 feet.

This weather, with wind and snow-flurries, continued during the following days. Although they tried to make use of the wind by rigging up tarpaulin sails on the sledges, they nevertheless got on so slowly that it began to dawn on Nansen that, at this rate, there would be small prospect of reaching Christianshaab now that the season was so far advanced. On the 28th, therefore, he determined to take a different direction, and steer due west, for Godthaab, or

rather for the shores of the Ameralikfiord (64° 10′), directly south of Godthaab, a considerably nearer point on the west coast. This proposition was received with joy by everyone, and they set off through the snow with the same unremitting toil, although in a slightly different direction.

The projecting peaks (nunataks) which, up to this point, they had passed from time to time, now disappeared; the last glimpse of bare rock was seen on August 31. After that nothing but ice and snow met their view until they reached the west coast.

Still their course lay steadily upwards. The snow-field rose in long, gentle waves, higher and higher toward the interior.

For weeks they fought their way inland in this fashion, one day exactly resembling another, and full of endless toil from morning till night. The surface of the snow was now smooth and even as a mirror, broken only by the tracks they themselves made with their feet or their sledges. The snow, frequently fresh-fallen, was, as a rule, fine and dry, and therefore exceptionally heavy to drag the sledges through. The day's march under these conditions was not long—not more than from five to ten miles, although they were now able to use snow-shoes.

As they advanced the cold became more and more severe. When the weather was fine, indeed, the midday sun was often quite oppressive, and their feet would get wet in the slush; but as soon as the sun went down, they felt the cold of the nights so much the more keenly—and they were often in danger of having their wet feet frost-bitten. 'It often happened, when we came to take off our laupar-shoes of an evening, that we found them frozen fast in one solid piece with snow-sock and stocking.'

On September 11, the temperature at night within the tent was under −40° C. (−40° Fahr.), and outside the tent probably under −45° C. (−49° Fahr.). The difference between the day and the night temperature was often more than 20° C. (36° Fahr.). Even inside the closed sleeping-bag, the cold was so severe that when they awakened they would often find their heads completely surrounded with ice and hoar frost. 'To be obliged to be out constantly in such cold is not always agreeable,' says Nansen in his book. 'It often happened that so much ice formed about the face that the beard was absolutely frozen fast to the wrappings round the head, and it was difficult enough to open the mouth to speak.' When in addition to the frost there came a snow-storm, we can readily understand that it was no joke for them to drag themselves, each with a heavy sledge as well, day after day across the interminable ice desert, at an altitude of 8,000 or 9,000 above the sea. From September 4 to 8, they encountered a furious snow-storm, with a temperature of −40° Fahr. On the 7th indeed they dared not stir from their tent, which was carefully hauled taut, lest the wind should blow it to shreds—in which case, no doubt, their saga would have been over. But when it was at all possible their daily life followed its regular course; and in spite of cold and snow-storm, thirst, 'fat-hunger,' and other hardships, they toiled steadily on towards the west coast. On September 5 they passed the highest point on their route, 8,860 feet.

On September 11 and 12 they were at a height of about 8,300 feet; and from here began a perceptible, if not very marked, down gradient towards the west. On the 16th they came upon several pretty sharp declivities, and when the

temperature at night 'just failed to reach zero' they all felt that it was quite mild.

On the 17th they saw a snow-bunting, and knew they must now be nearing 'land.'

On the 19th they had a favourable wind, and hoisted sails on the sledges, which they lashed together, two and two. They were soon going at a spanking pace, and now at last



UNDER SAIL IN THE MOONLIGHT—CREVASSES AHEAD!

they were distinctly upon the downward slope towards the coast. Late in the afternoon they saw 'land' for the first time. They went on sailing in the moonlight, and very nearly sailed their last voyage, for they had now reached the fissured marginal zone of the inland ice, with its yawning crevasses many hundred feet deep.

Nansen himself had the fingers of both hands frost-bitten that evening, and suffered 'almost intolerable pain' (it

must have been bad indeed!). They had little enough to eat, too; but for all this they cared not a whit, for they knew now that they were nearing the west coast.

The next morning (September 19) when they looked out of the tent, and saw the whole country south of Godthaabsfiord spread out before them, one can guess what were their feelings. 'We were like children—a lump rose in our throats, while our eyes followed the valleys and sought in vain for a glimpse of the sea.'

The next day they advanced pretty briskly, although with the greatest caution, on account of the numerous fissures, among which they had many narrow escapes. On the evening of the 21st, for the first time since leaving the east coast, they found water, and after several weeks of thirst were able to drink freely. 'We could positively feel our stomachs distending,' says Nansen. These were memorable days for them all.

They pushed on now towards Ameralikfiord; but it was an advance under difficulties. The ice soon became terribly uneven, and full of cracks and crevasses on all sides—sometimes so impassable that they had to make long detours. Several times, one or another of them would fall into a crevasse, but would generally manage to get his alpenstock fixed like a horizontal bar across the fissure. 'It was odd enough that none of us fell in any deeper.'

In spite of untold difficulties and dangers they made their way during the succeeding days across this treacherous marginal zone, and at last on September 24 reached naked soil, and had the inland ice for ever behind them. 'No words can possibly describe what it was to us merely to have earth and stones under our feet—the sense of well-being that thrilled through every nerve when we felt the

heather springing under our step, and smelt the marvellous fragrance of grass and moss.'

Their difficulties, however, were not yet over—they had still a good way to go down the long Austmannadal, and now everything had to be carried on their backs. This final stage they accomplished in the following days, and at last the fiord was reached.

Here Sverdrup and Balto set to work to stitch together



NANSEN AND SVERDRUP IN THE CANVAS BOAT

the hull of a canvas boat, using for the purpose the sail-cloth floor of the tent; while Nansen cut willow-wands to make the frame. Oars were improvised out of bamboo staves and split willow-branches covered with sail-cloth. For thwarts they had nothing but a theodolite-stand and two thin bamboo rods.

It was an uncouth nutshell of a boat, about 8 feet long, not quite 4 feet 6 inches wide, and scarcely 2 feet deep. It

was just big enough to hold Nansen and Sverdrup, and the most necessary baggage; and they had to keep their tongues pretty straight in their mouths, or it would have capsized.

After a terrible business in getting boat and baggage through the river delta and across a clayey spit of land to the open water, on September 29, Nansen and Sverdrup at last rowed off down the Ameralikfiord. Although the boat could scarcely be classed as A1, and leaked so that it had to be baled every ten minutes, it nevertheless carried them to their journey's end.

They had favourable weather on the whole, and, by dint of great exertions, they brought their coracle safe and sound to New Herrnhut at midday on October 3. Scarcely had they got ashore, when a terrific southerly gale came on. From New Herrnhut they went overland to Godthaab.

Dietrichson, Christiansen, and the two Lapps, who had remained behind at the head of the Ameralikfiord with the bulk of the baggage and no great store of provisions, were brought off in safety as soon as the weather permitted; and thus, on October 16, did this remarkable expedition come to a fortunate close.

'We had toiled hard, and undeniably suffered a good deal in order to reach this goal; and what were now our sensations? Were they those of the happy victor? No; we had looked forward so long to the goal that we had discounted its attainment.' So Nansen writes of his feelings the evening before they arrived at Godthaab. And this is, no doubt, comprehensible enough. They were too tired, too worn out, for the abstract exultation at having actually reached their goal to be able to assert itself effectually against the more material delights, for example, of eating till they were satisfied and sleeping in a proper bed.

Besides, the satisfaction had been broken up into many happy moments during the actual journey—they had had a taste of it when, with confident hope, they landed on the east coast, after forcing their passage through the drift ice; they had revelled in it when they first saw land from the heights of the inland ice, when they first found water to drink, when they first felt the solid earth, with heather and moss, under their feet, when they launched their boat on the waves of the Ameralikfiord. The satisfaction really lay in the exploit as a whole, in the stimulating open-air life, toilsome though it was—not so much in the goal attained, as in the struggle to attain it. As soon as that was done, why, it was done; there was no longer anything to toil and strive for, and lassitude rushed in upon them until other more distant goals began to loom ahead in their thoughts. This, indeed, is what inevitably happens to every man who is really born with the spirit of research. So long as he has strength and faculty for new problems, his joy over those achieved must be short-lived. It must give place, in the ferment of the mind, to new aspirations; and in Nansen's case these new aspirations were already lying in wait. We may safely assume that even during his stay in Greenland the plan of his next great enterprise must have been taking shape in his thoughts.

When the expedition reached the colony, the ship from Godthaab had already started. Nansen, however, got kaiak-men to take letters to Ivigtut, seventy miles south of Godthaab. They were duly delivered, at the last moment, on board the steamer *Fox*, which had carried McClintock on his voyage in search of Franklin; and thus the news of the successful issue of the Greenland expedition reached

Europe that autumn. It chanced that the *Fox* was obliged, by scarcity of coal, to touch at Skudesnæs, so that Nansen's native country got the first intelligence.

The two letters brought by the steamer, one from Nansen to Gamél, the other from Sverdrup to his father, were soon telegraphed over the whole world, and, as will be remembered, were everywhere received with great rejoicing.

Meanwhile Nansen and his comrades had to winter in Godthaab, where Herr Bistrups, the director of the colony, Doctor Binzers, Pastor Balles, and the other Danish residents, showed them the greatest hospitality, and did everything to make their stay as pleasant as possible. Nansen himself turned his time to account in studying the Eskimos. He shared their life with them in their huts, went thoroughly into their methods of hunting, their customs and occupations, and even got to know their language pretty well. He learned to manage the kaiak and wield their weapons; in short, he spared no possible pains in his study of this remarkable people, for whom he soon came to entertain a real affection.

He also made several excursions with the Greenlanders, a hunting expedition to Ameralikfiord, and longer trips to Sardlok and Kangek, during which he lived for some weeks entirely with the Eskimos.

The results of his studies he afterwards embodied in his book on *Eskimo Life*, in which he gave lively expression to his sympathy with these children of nature, doomed as they are to extinction. This book, as we shall afterwards see, is an important document towards the understanding of his own character and temperament.

On April 15, 1889, while Nansen and his comrades sat chatting over their coffee with the colonial director and the

doctor, the whole colony resounded with one universal cry, 'Umiarsuit! Umiarsuit!' (The ship, the ship!) It was the longed-for vessel, *Hvidbiörnen*, under the command of Lieutenant Garde.

The hour of departure had come, and everything was soon in order. 'It was not without sorrow,' Nansen says, 'that some of us turned our backs on the people who had been so good to us, and the place where we had lived so happily.' So far as Nansen himself is concerned, one may be sure that these words are the expression of sincere feeling. A nature like his, with its healthy passion for open-air activity, must have been in its element among these kindly primitive people. He relates a charmingly characteristic little incident of their leave-taking. One of his Eskimo friends, whom he had often visited, said to him the day before his departure: 'Now you are going back to the great world whence you came to us, and you will meet many people there, and hear many new things, and you will soon forget us; *but we will never forget you.*'

Those who know Nansen know that he has not forgotten his Eskimo friends; and those who have read his book describing their life will understand how dear they had become to him.

On May 21, after a favourable passage, *Hvidbiörnen* anchored in the harbour of Copenhagen. It was a little more than a year since Nansen, on his way to Greenland, had passed through Copenhagen, and put the hasty finishing touches to the preparations for the expedition. A great deal had happened in the interval. In himself, indeed, he was just the same when he came back as when he went away; but in the eyes of the world he was a very different person. Then he had been a young dare-devil setting forth on a forlorn hope;

now he was the world-renowned explorer who had successfully carried through a great undertaking.

And then came the triumphs. First a week's festivities in Copenhagen, and then the home-coming—such a home-coming as has fallen to the lot of no other Norwegian. It was a lovely day as the triumphal procession passed up Christiania Fiord—all the ships were in festal array, the woods wore their first green leaves, there were flowers and flags and music on every hand, up the whole long fiord, to the city. It was as though a flood of colour and warmth had streamed forth to greet these visitants from the white wastes of the inland ice.

First came the men-of-war and the torpedo boats, skimming along beside the *M. G. Melchior*, and forming a guard of honour, right up to the capital; then the great squadron of steamships, then the sailing-boats and cutters with their white sails, darting around Nansen's ship like a flock of sea-gulls, now astern, now abeam, now ahead. There he stood in his grey clothes which had turned to dirty brown in the Greenland turf huts. The honour done him was too overpowering for him to feel proud at that moment. A softer and more subdued emotion must doubtless have been in the ascendant. He must have felt how he passed over into his people, and became one with it. He had gone forth as an emissary, an interpreter of this people; the courage which goes unknown and unrecorded to its fate in the dark nights on sea and fiord, it had been his happy lot to lead forward into sunshine and victory before the eyes of the whole world. Among all the thousands who waved to him from the ramparts of Akerhus, who burst the cordon of the police and swarmed round his carriage in the streets, how many at that moment had any thought of science? It was the exploit

that appealed to them—they saw in him the victorious chieftain, the connecting link between the heroes of the Sagas and the heroes of everyday life, the fisherman clinging to his overturned boat, the snow-shoer on the wintry uplands, the lumberman shooting the rapids on his raft. They saw in him the national type; and they were right in a way. In that hour he must certainly have felt himself close-knit to the soil from which his deed had sprung, and memories of childhood must have rushed in upon him when his carriage stopped at the house of the sisters Larsen, and he ran upstairs to greet the old housekeeper at Great Fröen, who had bandaged his blood-stained forehead the first time that he kissed the ice.

But we, whose business it is to give a complete picture, cannot ignore science; for, to the world at large, it is the scientific import of the expedition that gives this national welcome its true historic validity.

CHAPTER XII

THE SCIENTIFIC SIGNIFICANCE OF THE GREENLAND EXPEDITION.[1]

THE plain man has sometimes asked whether, to be quite frank, the scientific outcome of the Greenland expedition was not rather meagre, and whether we might not have expected something very different. Some have thought it particularly strange that Nansen, being originally and specially a zoologist, did not bring home with him more zoological information. And there are even some, with more pretence to scientific knowledge, who have underrated the results of the expedition because they have not been, like those of earlier expeditions, published in ponderous technical tomes.

The answer is tolerably evident. Both by their plan and by the particular circumstances under which it was executed, the explorers were compelled to concentrate their energies upon the one great point of pressing steadily forward, both through the drift ice and over the inland ice. No retreat was possible; all bridges were broken from the moment the expedition left the *Jason;* and it is not too much to say that their lives depended upon their wasting no time that could possibly be applied to making headway. And in the

[1] Nansen first summarised in lectures the scientific results of the expedition. They were then set forth in an appendix to *The First Crossing of Greenland*, and finally stated in full in the article entitled 'Wissenschaftliche Ergebnisse von Dr. F. Nansen's Durchquerung von Grönland, 1888,' von Prof. H. Mohn und Dr. Fridtiof Nansen, Ergänzungsheft Nr. 105 zu *Petermanns Mittheilungen* (Gotha, 1892).

act of progression, whether in the boats, on the ice floe, or over the inland ice, their strength had always to be exerted to the uttermost.

Even in the moments of necessary rest, it was impossible to devote a great deal of time to observation. There was of course no possibility of making collections, since the baggage had to be restricted to what was absolutely essential in order to support life. The scientific harvest, then, was confined, in the nature of things, to what could be gathered during the actual advance, and without any hindrance to it.

As to zoological and botanical results, it was almost impossible on board the *Jason* to dredge or otherwise make collections, since their contract was that nothing should interfere with the seal-hunting operations. Had Nansen, like Nordenskiöld, had a steamer of his own, the case would have been quite different.

The fact that Nansen did not bring back from the inland ice any material for zoological or botanical disquisitions, is explicable on the sole and sufficient ground that within the marginal zone on both sides there was not a single trace of life to be seen. This is an interesting and important negative result, even though it can be stated in two words. On the west coast, during their winter at Godthaab, they were entirely without scientific apparatus either for collecting (such as dredges, &c.) or for preserving specimens (spirit), or for study (microscopes, books of reference, &c.).

Thus it is not surprising that the zoological and botanical harvest of the expedition was scanty; it could not, under the circumstances, be otherwise. We must

bear in mind, too, that Nansen is not specially endowed by nature with the collector's faculty, so that we can scarcely expect from him an exhaustive catalogue of the fauna and flora of a given locality, or the discovery and description of this or that new species. However useful and important such labours may be, Nansen's temperament is not adapted for them. On the contrary, his talent evidently lies in the direction of concentrating every energy upon the solution of individual problems of wide significance; descriptive cataloguing does not sufficiently stimulate his interest.[1]

On the other hand, the geographical, geological, and meteorological results of the expedition were particularly valuable and important. The meteorological observations are due for the most part to Dietrichson. 'He devoted himself to this task with a zeal and self-sacrifice which I cannot sufficiently admire,' Nansen writes in *The First Crossing of Greenland*; and 'what it means to do such work under such circumstances, no one can fully realise who has not tried to take observations and keep a meteorological diary exactly and punctually, in a temperature of −30° C. (−22° Fahr.) in the midst of exhausting labour and with danger threatening on every side, having sometimes to write when the fingers are so numbed and swollen with cold that they can scarcely hold the pencil. Such work as this demands character and energy indeed.'

The meteorological, astronomical, magnetic, and trigonometrical observations have been tabulated by Professor H.

[1] The expedition was not, however, quite without zoological results. In addition to the accounts of the hooded seal, the grampus, the bottlenose whale, &c., included in *The First Crossing of Greenland*, considerable collections were brought home by the *Jason*, though not of sufficient interest to be made the basis of a special study.

Mohn, in the above-mentioned paper in *Petermanns Mittheilungen*. Of special interest is the series of readings of the atmospheric temperature in a high-lying desert of snow and ice, which the expedition supplied for the first time. The effects of radiation in the dry rarefied atmosphere of the inner plateau proved to be surprisingly great. During the period of extreme cold which the expedition encountered between the 11th and 15th of September (at a height of 7,000 or 8,000 ft.), the temperature fell at night so low as −45° C. (−49° Fahr.), and rose in the warmest hours of the day to −20° C. (−4° Fahr.), thus showing a daily variation of about 25° C. (45° Fahr.). Such extreme variations are not elsewhere recorded except in the interior of the Sahara and other deserts, where also the dryness of the air renders the radiation very great.

In accordance with the observations of the expedition, Mohn calculates that the mean temperature of the interior of Greenland at a height of about 7,000 feet is −25° C. (−13° Fahr.), and the mean temperature for January and July respectively is −40° C. (−40° Fahr.), and −10 C. (14° Fahr.)

We may assume with tolerable certainty that the temperature of the inland ice in the coldest months falls as low as −65° C. (−85° Fahr.), 25° below the mean temperature of January, or probably even as low as −70° C. (−94° Fahr.).

It thus appears, as a result of these observations, that there is in the land ice of Greenland a pole of maximum cold, the second in the northern hemisphere, at the same distance from the North Pole as the one formerly known at Werchojansk in Siberia. These facts were formerly entirely unknown. The meteorological character of the interior of Greenland seems to exclude the hypothesis, advanced by

Nordenskiöld among others, of a föhn-wind [1] blowing from one side to the other.

The geographico-geological results consist mainly in observations as to the conditions of the land ice—firstly, as to its extent, and then as to its conformation and general nature. The main scientific result of the expedition, as may be understood from the foregoing sketch of the Great Ice Age, is the fact, which it has once for all ascertained, that we have in Greenland an ice-covered country offering a tolerably exact representation of the state of Northern Europe and North America during this important era in the history of the earth.

Even before Nansen's expedition, indeed, there was every reason to suppose that the whole of the interior of Greenland was covered with ice; but absolute certainty on the point was only to be secured by an actual crossing of the ice sheet. Even such an Arctic specialist as Nordenskiöld, who had penetrated further upon the land ice than any one before him, still conceived it possible that the interior of Greenland was not entirely covered by ice, conjecturing that in 1883 he might simply have chanced upon a broad band of ice stretching right across the country at latitude 69° and 70°. Nansen's expedition must be held to put an end to all idea of 'oases,' or considerable stretches of ice-free country, in the interior of Greenland; and this result has now been completely confirmed by Peary and Astrup's expedition over the northern part of the Greenland ice field.

The final proof of the existence of an ice sheet of such vast extent is so important from the geological and geographical

[1] A moist sea-wind, striking against a chain of mountains and cooling at a great height, gives off its vapours in the shape of rain; thus the latent heat of the aqueous vapour is liberated, and the wind sweeps down on the other side of the mountain chain as a warm, dry wind, called by the Swiss *föhn*.

point of view that it will no doubt render the expedition for ever memorable in the annals of science. And around this main result a number of minor and special results group themselves, by which our earlier conceptions of the configuration, surface, structure, and meteorology of the land ice (for the most part based on observations taken in its marginal zone) have been entirely altered.

As to the configuration, Nansen discovered that the ice sheet arches with extreme regularity over the whole of Greenland (except the narrow coast-rim) like a shield somewhat pointed towards the south, all transverse sections of it taking very nearly the form of segments of circles whose radius increases from the south northwards. The surface of the shield is thus more convex towards the south and flatter towards the north. The highest point reached by Nansen was about 8,660 feet above the sea; and from this point the surface sloped with remarkable regularity symmetrically to both sides, just as one would expect in an extremely viscous plastic mass.

The highest point of Nansen's route, however, lay somewhat nearer to the east coast than to the west. It is probable, then, that the ice-shed of Greenland (the dividing line between the ice which flows westward and that which flows eastward) must lie approximately parallel with the longitudinal axis of the land ice; so that its situation has probably nothing to do with what would have been the water-shed if Greenland had been free from ice.[1]

The 'nunataks' of the coast zone apart, no trace of projecting peaks appeared anywhere on the route of the expedi-

[1] A number of investigators, and particularly G. de Geer, have proved that in Scandinavia, during a great part of the glacial epoch, the ice-shed (the division between the ice which flowed to the Atlantic and that which flowed to the Baltic) was quite independent of the existing water-shed.

tion; nor have projecting peaks been found anywhere else in Greenland, except within the narrow coast belt. Thus the mighty mantle of the land ice, at some points no doubt something like 7,000 feet deep, completely conceals both mountain and valley in the interior. It is itself entirely devoid of any covering of stones, gravel, or dust,[1] and without any trace of life.

The almost mathematical regularity of the surface of this mantle of ice and snow proves that it is entirely conditioned by the rainfall and snowfall, by the wind, and by the laws which govern the contour of viscous plastic bodies, and is not in any appreciable degree affected by the special form of its substratum. This substratum, or in other words, the underlying bed-rock, has doubtless in Greenland, as in Scandinavia, a quite irregular mountainous surface.[2]

[1] No trace was found in the interior of the dust described by Nordenskiöld on the outer zone of the land ice, which he regarded as cosmic, and entitled 'kryokonite.' It has long been proved, by Von Lasault, Lorenzen, Wülfing, and others, that this dust does not descend from space, but is blown up from the ice-free coast rim. Nansen's discovery that it is entirely absent in the interior confirms the theory that kryokonite cannot in any appreciable degree be of cosmic origin.

[2] The land ice must have originated somewhat in this fashion: in the high-lying parts of the country (then probably higher than at present) more and more of the snowfall must have remained unmelted from year to year, as the climate grew steadily colder, and the land perhaps rose higher and higher over the sea level. Thus, through the customary transformation of snow into glacier ice, more and more glaciers were formed in the higher parts of the country, which gradually extended over the lower regions as well, until at last all inequalities were filled up, and the whole country was buried in ice and snow. As is proved by the glaciers along the fiords, the ice flows out from the interior to all sides; it also melts into water on its under surface (even in winter, rivers and brooks everywhere flow from under the Greenland glaciers); and thus the growth of the ice sheet, through the perpetual rain and snowfall on its upper surface, is kept in check. It is as yet impossible to say whether the diminution of the ice sheet by the giving-off of icebergs and the melting of the under surface (together with the doubtless quite insignificant evaporation from the upper surface), or its increase by means of rain and snowfall, is for the present the more active; or, in other words, whether the ice sheet of Greenland is on the whole increasing or decreasing. What is certain is that it was at one time more extensive than it now is.

According to Nansen, then, the fact that the surface of the land ice takes the form of a convex shield in no way indicates that the mountains under it are highest where the ice sheet is highest. The convex form, with the greatest elevation in the middle, must have arisen irrespective of the substratum, because a viscous plastic mass flowing out to every side must necessarily be at its highest where the resistance to its outflow is greatest, and consequently, as a rule, in its middle.

The surface in the interior consisted everywhere of snow, not of ice. They could everywhere plunge their alpenstocks (over 9 feet long) as far as they would reach through the covering of snow, which proved to consist of alternate layers of loose snow and thin sheets of ice, formed by the slight meltings of the surface. But in their deepest soundings they found no solid ice. The upper layer, throughout the interior, consisted of loose snow-dust, which was swept by the wind into long dunes, so flat as to be almost imperceptible, running approximately north and south. The stratification of the snow sheet in the interior of Greenland proves that here, at a height of 6,000 feet and more, the snow does not melt in the summer so much as to form a surface of strong ice; though the very trifling quantity of snow-water, which the sun forms by melting the thin surface layer, is congealed by the frost at night, and does not flow off in liquid form.[1]

All these important and interesting facts as to the interior of the land ice may be said to have been practically unknown before Nansen's expedition, all earlier expeditions having either failed to get beyond the marginal zone or

[1] We may recall how Nordenskiöld in 1883 had to stop his advance because the whole surface was found to be supersaturated slush, in which they were almost in danger of drowning.

advanced such a short way within it as to have been unable to realise the essential features which give the land ice its individuality.

We cannot here go into the details of Nansen's report as to the conditions of the land ice. We cannot enter into the questions of its movement, depth, and diminution by melting; or reproduce the numerous facts he has collected, as to the nature of the marginal zone, the formation of icebergs, the Polar current, and the drift ice on the Greenland coast. These observations are of less general significance than those above mentioned.

The more clearly we recognise the importance of a complete understanding of the Great Ice Age, the more highly will the scientific results of Nansen's Greenland expedition be appreciated.

CHAPTER XIII

EVA NANSEN—AN ILL-STARRED INTERVIEW

By Nordahl Rolfsen

On the night of August 12, 1889, a shower of sand and gravel rattled against the window-panes of the house in Eilert Sundt's Street, where lived Fridtiof Nansen's half-sister, to whom he was in the habit of confiding everything. Her husband—the friend who, as a boy, had been Fridtiof's companion in field and forest, and had taught him to shoot and fish—sprang out of bed and opened the window.

'Who is that?' he called out angrily into the night. A grey figure loomed through the darkness, and a voice was heard to say: 'I want to come in.'

From the window fell terms of abuse such as used to be current in Nordmarken. But the grey figure stood its ground: 'I want to come in.'

And at two o'clock in the morning, Fridtiof Nansen planted himself in the middle of his sister's bedroom, with his long legs far apart, and his hands in his trouser pockets, and glowered at her. She sat up in bed.

'Good Heavens, Fridtiof, what's the matter?'

'I'm engaged, my girl!'

'Oh, are you? To whom?'

'To Eva of course.'

Then he said he was hungry. And his brother-in-law had to go out to the larder for cold roast beef and down



MRS. NANSEN

into the cellar for champagne. Then the table was spread on his sister's bed, and the new chapter of Fridtiof's Saga was inaugurated by a nocturnal banquet, at which he no doubt sang this stave from the *Haavamaal*:

For love of maid
shall no man mock
or scorn his fellow;
the wise is oft won
by the loveliness
that moves not the witless.

Fridtiof wrote to his Björn and told him the news. But Sverdrup did not reply 'Fridtiof, thy folly seems strange to my mind.' He wrote: 'I have lain awake the whole night thinking it over; the deuce only knows why I'm so glad. For I suppose it's all up with the North Pole now.'

But thus says the Saga—and for this we have the testimony of a true man and a true woman—that when Fridtiof Nansen spoke of his love he said in the same breath, 'But you know I'm going to the North Pole.' 'For,' says the one who has the best reason to know, 'he always plays fair.'

But who is she?

Thus says the Saga: There was once a very famous man, a poet, whose name is known over Europe, America, and Australia. And he would sometimes walk the streets so buried in thought that he didn't bow to Eva Nansen. And she complained of it. And the famous poet said, 'If it happens again, you have only to whisper as you pass, "Bow, you devil!"' And she did.

And this was the woman I was to interview! I trembled. I had once been at Godthaab before Nansen's departure, and she had set two yellow hunting-dogs on me—for the more I have thought it over, the more I am convinced that it was she. And they bit and tore my calf, and I did not complain,

for I knew that the poor animals were being trained to bear hunger, and I willingly contributed my mite—no such small one either—to the North Pole Expedition.

And now she was alone. And I must face her. I simply dared not. I would first approach her by telephone, and even so I would have an intermediary. I sent and asked for an appointment. She replied that she was very busy and couldn't promise anything definite, but she fancied she might manage it—in about three weeks—by telephone.

But in three weeks this book was to be through the press. I had to pull myself together and risk it. I did not go by rail. I took a sledge, so that I could beat a hasty retreat at any moment. I drove in soft snow, very slowly, up hill and down dale to Svartebugta, and gazed out over the ice on the bay, dull and soft in the spring thaw. 'Heaven grant that she may thaw, too!' I sighed.

She received me. She signed to her dog that he was not to bite me, and she had my horse fed. She uttered certain mystic words which I thought might be construed to mean that I too should have something to eat.

I was quite overpowered; this friendly reception took me utterly aback. I instantly took off my great coat and out my pencil. A singular gleam came into her eyes, which reminded me of the princess in the fairy tale, when she looks at the victim who has vainly attempted to achieve the quest, and has to retire with three red stripes scored on his back, and salt rubbed into the wounds. But she was monstrously polite. At that moment Liv came in crying with all her might. I remembered having read in an article by an English interviewer how she had laid her hand on the child's head and said: 'This is my only consolation.' But Liv went on shrieking, for she wanted a pair of scissors

to cut the tablecloth with, and Madam Eva said crossly: 'Fie! you're intolerable, Liv!' And Liv was removed. I was abashed; but I said with deep feeling: 'Of course I know she is your only consolation.'

Whereupon she laughed in my face: 'Liv wasn't at home that day, as a matter of fact.'

'When the interviewer was here?'

'She wasn't in the house.'

I stood and chewed at my pencil, and then blurted out: 'Wouldn't she tell me a little about Nansen?'

'Nansen? I don't know anything about Nansen.'

But a peculiar gleam came into her eyes, a gleam as of a sunbeam through rain clouds.

Pause. I went and glared stupidly at the pictures.

I stopped in a remote corner before a beautiful picture by an English master. It represents a woman sitting, or rather crouching, on the globe, with her eyes blindfolded; but her face below the bandage irradiated with light. And under the picture is written 'Hope.'

And this was just at the time when Nansen's name was flying far and wide over the globe. Mysterious tidings had arrived that he had reached the North Pole and discovered new land. But no one knew anything for certain. Over all the civilised world, women were saying to each other, 'I wonder how Mrs. Nansen feels?'

I was seized with emotion there in the corner. I dried my eyes with my pencil, and turned and said in a husky voice: 'Where did you get that picture?'

'In London. Nansen and I bought it there.'

'Had you at that time—have you—I mean, has it any association—any special value in your eyes.'

'None whatever.'

I dropped into a chair beside the hearth, or the fireplace, or whatever they have out there at Godthaab.

She threw some papers across the table to me. They contained the last report from the Norwegian-Swedish Minister at St. Petersburg as to the possibilities and impossibilities in connection with the Kuschnarew letter, &c., &c. 'Latest news,' she said dryly. She could not have thrown down the *Morgenpost* with less reverence.

'It grows less and less probable, don't you think?' she said with light scorn.

I read the whole folio through with care, and began, with all the earnestness of conviction, to argue for Kuschnarew and his nephew.

'I think they're talking nonsense, the whole family,' she said shortly.

This was more than I could stand—I who was to tell all Europe how his wife was sitting quivering like an aspen leaf between joy and fear!

But before I could say anything, I felt a cold shiver down my back. She had opened a door behind me. 'Would you like to see my husband's work-room?'

Now I remembered distinctly what the English interviewer had said about this work-room: 'Here one is reminded of the saying of Scripture about the virgins who had trimmed their lamps and awaited the bridegroom.'

'All you can find is at your disposal,' she said amiably, shut the door behind me, and sat herself down in her own warm room by the hearth or the fire-place, or whatever it is.

And there I stood alone and gasped for breath. I had the sensation of being in the ice-basin of a Roman bath. I made a note:

'Have discovered the third pole of maximum cold.'



NANSEN'S STUDY

That was the only thing I did discover. Such a chaos as that room I have never come across. Everything lay topsy-turvy, in boxes and out of them—music and tools and pemmican, letters and folios, and under a pile of old photographic plates, Heaven forgive me if there wasn't a certificate of nomination as a corresponding member of no less a body than the Académie des Sciences in Paris.

By means of overturning and breaking up frozen blocks of books and packages, I got my blood into circulation. I hauled out a dirty old photograph. It represented this room. On one side of the hearth sat Fridtjof Nansen, leaning forward, and on the other side, something dæmonic, a black figure, which I guessed to be his wife. I shivered with cold the moment I stopped pulling things about, so I crept back to the warm room. She sat bent over the fire; but the chattering of my teeth roused her.

'Was it cool in there?' she asked insinuatingly. Then she leaned back with her arms crossed. 'Now you must ask questions. You must be indiscreet.'

Indiscreet! Good Heavens! I didn't even dare to ask when she was born. I don't know at this moment; and yet it's a date that ought to figure in a biography.

I asked about the most absurd things, about things I could have learnt in any biographical dictionary—not a question about such intimate matters as the skilled interviewer, who 'knows what the public wants,' would have pried into. In the end it was I who sat and talked—told her stories about him, stories of his childhood and boyhood, which I had picked up here and there, and which she had not heard.

Visitors arrived, who were to stay to supper. I do not think I was invited, but I pretended that I was. The visitors

were in the best of spirits, the hostess's laughter was fresh, musical, infectious.

Shortly before supper there was a brief interval of silence. The lamplight fell upon her face—it was pale. She rose hurriedly, and begged us to excuse her a moment.

'You want to say good-night to Liv?' I said, sympathetically.

'She's been sound asleep for hours,' she said as she left the room.

But I believe all the same that she went to say good-night to Liv. I wondered if she missed the child when she was away from her on her concert tours.' Yes, to be sure she missed her. Had I not heard something to that effect?

You know that there are things as to which one can't be quite sure whether one has dreamt them or not. And this is one of them. Mrs. Nansen had certainly been a great deal in my dreams during the last few nights, and perhaps I had dreamt the following scene:

It was in an hotel at Gothenburg; she stood before her impresario, pale and threatening of aspect. 'Still no telegram?' It was not a telegram as to new concerts and new triumphs she was inquiring about. It was the daily telegram about Liv. Her impresario tried to think of an answer.

'It's not late—not more than——'

'It's ten o'clock.'

'But Liv is perfectly well—you know that.'

'I don't know it. I told them they were to telegraph me every morning. The people at home dare not telegraph to-day—they dare not!'

She was to sing that evening. The whole day, the

impresario was secretly sending inquiries by wire. Mrs. Nansen went back to her room, and walked up and down, up and down, never resting, and never opening her lips. At five o'clock she lay down. Then came the message: 'Liv well'; and then—'like summer tempest came her tears.'

Was it a hallucination? A case of second sight? If so I must have had a moment of second hearing as well. For now I heard distinctly some one out in the passage saying, 'Now, be strong,' and some one answer, 'Am I not?'

'To be sure, to be sure.'

And then came an outburst. 'It's for Fridtiof's sake that I endure him—perhaps he may write a nice book—but for that, I'd send him about his business.'

At that moment the door opened. With a jest on her lips and laughter in her eyes, Mrs. Eva Nansen entered the room, looking young and radiant, and took my arm to go to table.

And I sat as though bewitched by her joy in life, a radiant, irrepressible gladness, uttering itself in laughter that rang out through the night as far as Svartebugta.

Next afternoon I sat in her mother's drawing-room in Frogner Street. Mrs. Sars is now over eighty, so I may say, with reverence, that I love her. For one thing, she is one of the best story-tellers in Norway. She was expecting me. Her three coffee-pots were already hissing on the table, and between them stood a basket containing cakes of an immoderate size.

Here, I thought, I shall be simply flooded with the daughter's biography. But the old lady seemed to me

reserved and reticent that afternoon. Instead of answering my questions, she kept on pressing me to eat one huge cake after another. It was clear that my mouth was literally to be stopped. Not without bitterness, I presently took my leave.

'I can't help thinking, dear lady,' I said, 'that since I last saw you, you have inherited certain not very sympathetic characteristics from your daughter. It pains me to have to say so, but I shall be compelled to write under her picture the words of the Danish gentleman who drew up the Nansen pedigree: 'I have met with but scant assistance at the hands of the Norwegian branch of the family.'

The old lady stood there stiff and upright. Her face reminded me vividly of the placards which I have seen stuck up on German houses: 'Bettelei und Hausiren ist hier verboten.'

Such were my adventures in search of data for the following biographical notes. I know nothing, I have to guess at everything. I therefore think myself entitled to claim the reader's indulgence.

I will begin by retracting what I said in my haste to old Mrs. Sars. It is not the mother who takes after the daughter, but the daughter who takes after the mother. Mrs. Maren Sars, the sister of the poet Welhaven and wife of the famous zoologist, has probably never written a line or sung a note —except when she crooned over the cradles of her children —but she is one of the women who bring artists into the world. All the materials of the artistic temperament are latent in her, ready to be developed in the next generation. She has herself no impulse towards creative work, no longing to fight her way to that ultimate expression which we call art. It has

never occurred to her to seek publicity of any kind. But you should hear her of a Sunday evening, when her family and friends are gathered about her, and the lamps are taken out of the room, relating her strange dream—how she went into the church of St. Mary by night, and saw all the dead women of Bergen rise up in the pulpit, one after another, and confess their sins, while the blood dripped from the body of Christ on the great Cross—and you will marvel to find, outside of literature, such a narrative gift. She has deep emotion and dramatic power, an imagination which invariably chooses the right word, in short, a rare art of oral presentation. And it is no less remarkable to hear Mrs. Sars display her power of humorous observation, or relate some everyday episode which, in any one else's mouth, would be absolutely insignificant. She turns it about and shows it in such a light that it is all at once elevated above the plane of the commonplace; in other words, it undergoes the artistic transfiguration.

Mrs. Sars's gifts are precisely the elements out of which have grown up our folk-songs, our fairy-tales, and our Sagas. She possesses an epic-dramatic temperament of great spontaneity. But however striking her powers as an improvisatrice, she never misses to-day the points she made yesterday. An unconscious artistic instinct registers them securely.

It is said—for how should I know?—that Mrs. Nansen is passionately devoted to her mother. If so, this is one of the few cases of passionate devotion that can be rationally explained. For in Eva Nansen's rendering of musical romance, Mrs. Sars's temperament finds expression in conscious art. In the daughter's declamation, the mother's epic-dramatic power utters itself to the world, toned down, modelled, restrained, yet possessing all that inward glow

which is the soul of romance. The now famous singer has not, in her outward demeanour on the platform, her mother's gracious geniality—not when she first appears at any rate. She shows something of the Welhaven hauteur and coldness. It is evident at once that she does not want to ingratiate herself by her personality, but to conquer by her singing.

Made much of from her childhood onward, she has not been accustomed to beg for favour. And for many years, no doubt, her singing was simply a favourite pastime, a pleasant study, a joy, but not an ambition. When she came before the public she was at once received with open arms. Who can tell what would have happened if she, like many another notable artist, had had to battle against indifference, coldness, humiliation? Some think that she would never have condescended to walk that rough road, but would instantly have turned her back on the public and never sung again. 'Song,' these people say, 'was not to her the one essential, without which life is impossible, for the sake of which all must be endured.' For a while, indeed, she cultivated two arts, took up painting as her uncle did, and studied under Bergslien and Eilif Peterssen. But she gave it up because she herself did not think she had sufficient talent.

Her singing made its easy, natural progress from the drawing-room to the salon, from the salon to the concert-hall. Her first teachers were naturally the members of her own family. From her mother she got the spark of genius, her first lessons came from her sister, her further instruction from her brother-in-law, Lammers—so, at least, I picture to myself the course of her development. In Berlin she studied singing under Madame Artôt.

But Madame Artôt did not exercise the decisive influence

upon her; Fridtiof Nansen did that. Was it not through him that the notes of love, of motherhood, of suffering, entered into her voice?

They first met in the woods around Frogner Sæter—long before there was any question of Greenland or the North Pole. One day the young athlete saw the soles of two feet sticking up out of the snow. He was curious to know to whom they belonged, and when he drew nearer, behold! a white-powdered but proud little head appeared above the snow drift. It was Eva's. But Fridtiof's head was in no way troubled about her for many a long day. What was it that ultimately brought them together? How can I tell? I know nothing. But I do not believe the legend that he proposed to her the first time before the great Greenland expedition, was refused, and therefore set forth to end his days in the crevasses of the inland ice. Such a proceeding would have been a little far-fetched for so practical a nature; and why should he have taken Dietrichson and Sverdrup and the rest along with him? Because, as a chieftain, he must have attendance on his journey to the world below?

But I am very certain that it was two Saga natures that in this case met each other. The difference is that while his nature stands apparent to the whole world in his deeds, her inner and real self is as though sealed with seven seals. For both of them trifles are trifling—too trifling perhaps. Those commonplace considerations which win commonplace friends are foreign to them. Therefore they chafe and irritate some people, and are misunderstood. Each one of us has some dominant trait; and hers is a passionate devotion. On ordinary occasions she can be flippant, she can sparkle as frostily as snowflakes in the sunshine; but deep within there dwells an undivided and therefore potent feeling.

She is like Svanhild in *Love's Comedy*—she is not a woman who has

> In hundred hands placed out her capital,
> Dispersed it, so that no one owes her all;
> From no one can she crave again the whole,
> For no one give her life, her heart, her soul.

Brought up with tender care, indulged, made much of, in a home possessing all the simple luxuries of life, she accepts without a murmur his extreme asceticism, teaches herself to endure cold in the 'dog-hutch,'[1] eats his unpalatable messes—*mysost* (goat's milk cheese) and pemmican, which he is testing for the Polar Expedition—or refrains from eating them, and goes hungry for days at a time when she is out with him on small expeditions. Her own work, her artistic individuality, she keeps discreetly in the background. She appears, indeed, at concerts, but not often. Did she, one cannot but wonder, want to accompany him to the North Pole? And if she besought him to let her do so, what answer did he make? Did he find it in his heart to say the decisive, irrevocable word: Impossible? Or was it Liv who interposed?

When he had gone, she shut herself up for weeks, like a widow. She lived through this great crisis in the eternal tragedy of human life. He had chosen what he had to choose. She would not have had it otherwise. But it was not in her proud and fiery nature to hold rebellious thoughts entirely in check. Had not she, too, something else that was dear to her, very dear; and yet it was nothing, nothing at all. She would never, never have chosen her art in preference to him.

When she opened her door again to the world she

[1] See Chapter XVII.


Tit fra Eva Nansen
EW
1896

stood there erect, buoyant, smiling. She, too, is like a figure from the Sagas, and of the same lineage as he. If she has her hours of anguish, no one shall see her bowed down.

She has only one confidant—her art. After the terrible crisis, it took possession of the empty home, gently but decisively. To sit idle and wait would, for her, have meant to go mad. She had her own vocation and her right. She was not a woman only, but a human being to boot. Out of the empty desolation rose the need for activity, independence, the craving to make a career for herself in good earnest, to mount above the throng, and stand on something like an equal footing with him when, in the fulness of time, she should give him her hand in welcome home.

It was in November 1895 that she made her first appearance outside her own country and her own town. The moment was a trying one, no doubt; but the public of Stockholm, a public accustomed to fine voices and good methods, received her with sympathy and enthusiasm. The first step was taken, and the road lay clear before her.

CHAPTER XIV

ARCTIC EXPEDITIONS FROM THE EARLIEST TIMES

By Aksel Arstal

There is no royal road to the North Pole, unless, indeed, in this sense, that the ways to it are open to kings alone—kings among men. The mark of true royalty has always been that courage which is begotten of will, born of strength, and nurtured by intelligence.

We do not reckon Arctic exploration among the highest problems of humanity. Life certainly presents even sterner tests of courage and self-sacrifice than those to which the explorer, or for that matter the soldier, is subjected.

But the history of Polar exploration—that battle of the human soul and body against Nature in the guise of the ice sphinx, that campaign of the spirit of inquiry, of investigation, with its faithful vigils through the long nights of shuddering cold—forms one of the most moving chapters in the human Bible, the record of our race 'with its destiny's seal on its brow,'[1] the story of greatly willing, acting, and suffering man.

It is a chapter of victorious defeats.

Polar exploration is now in its third millennium. If the North Pole is reached in this century or the next, the boundary of knowledge within the Polar Circle will have moved forward, on an average, something under a mile for every

[1] *Peer Gynt*, Act V. Sc. 10.


ALASKA
BRITISH
NORTH
AMERICA
THE SIBERIAN ICE SEA
ARCTIC OCEAN
EAST
SIBERIA
WEST
SIBERIA
North Pole
Baffin Land
GREEN
LAND
Barents
Sea
NORWEGIAN
SEA
Arctic Circle

year since first an adventurous galley brought tidings of an ice ocean in the north. And the rate of progress will reach this average only if at last a sort of spurt is made to cover the remaining distance. At the average rate of progress which even our steam-driven century has attained, three hundred years would still be required for the completion of the task.

And yet the distance to the North Pole from the beacon built fourteen years ago by Lieutenant Lockwood on the little island which bears his name, off the north coast of Greenland, is no more than any reasonably good walker in one of the tourist districts of Europe would cover with the greatest ease in less than a month!

But the ice path is harder to tackle. Even in the height of summer, when now and then a lane of open water is to be met with among the floes, Parry and Ross did not progress more than some four miles a day. Markham covered ten miles, and found that his net advance had been—two! Endless time has to be spent in covering the same distance, forward and back, over the hummocky ice fields. The *Tegethoff* party, who set forth on the ice from Franz Josef Land in the summer of 1874, often failed to make so much as a mile a day in the deep snow. If only the necessary baggage could be minimised! Payer relates that, in the first days after he set forth, he used to return to the ship when his evening camp had been pitched to replace the consumption of the day with fresh provisions. Later on, the dog-sledges covered in a few hours distances which, in the advance, had taken a week! A reckoning after two months of toil showed, at last, that the drifting of the ice had reduced the distance from the ship to ten miles!

The first man who is historically recorded to have crossed

the threshold of the polar zone is the courageous astronomer and geographer, Pytheas, a contemporary of Alexander the Great. His starting-place was Massilia, the ancient Marseilles, a city whose spirit of restless inquiry was a heritage from its Græco-Asiatic ancestry. Who can tell to how many ardent spirits the worthy Pytheas, with his Thule, has cost grey hairs, or at any rate wakeful nights? Thule probably meant for antiquity nothing more than an unknown borderland, a *meta incognita*. The name, originally perhaps that of a definite locality, was afterwards applied by merchants and map-makers or geographers, now to one shore, and now to another, which had vaguely loomed upon the consciousness of the age somewhere on the northern horizon. But Pytheas not only led the first forlorn hope in the battle with the frozen seas—he also suffered the fate of so many who have forced their way into the world's great solitude, and acquired knowledge which their own age is not in a position to appreciate or to test. The geographical authorities of antiquity attack Pytheas as untrustworthy and mendacious. 'It were better,' writes one of them, 'to believe Euhemerus than Pytheas; for Euhemerus says only that he sailed to a single country, namely Panchaia, while Pytheas reports that he explored Northern Europe even to the world's end. Hermes himself would scarcely be believed if he made such an assertion.'

It is a thousand years since the Viking ships began to plough the North Sea and the Arctic Ocean. Sometimes storm-driven, sometimes spurred on by the love of adventure, these hardy seamen stumbled on one geographical discovery after another, often without knowing how to bring their discoveries home to the consciousness of the world.

Leif Erikssen and Torfin Karlsevne, on their voyages to

Vinland at the beginning of the eleventh century, crossed, once for all, the great dividing line between the Atlantic Ocean and the Arctic Ocean, which may, roughly speaking, be said to coincide with the isothermal line of 32° Fahr. This line, the true boundary between the Arctic and temperate zones, passes approximately from the sound between Newfoundland and Labrador to the sea between Norway and Bear Island. Only eastward of the meridian of Greenwich, that is to say, eastward of the point of section between that meridian and the seventieth degree of latitude, does the limit of the drift ice practically coincide for a considerable distance with the aforesaid isothermal line. For the rest, drift ice has been met with south-east of Newfoundland, even as far south as the fortieth degree of latitude, in the region of the Azores. Between the Azores and the Faröe Islands the ice limit forms a great arc, trending upwards towards Greenland and Iceland. Up to the Faröe Islands the outer boundary of the drift ice lies for a long stretch parallel with the isothermal line, and some 400 miles south of it.

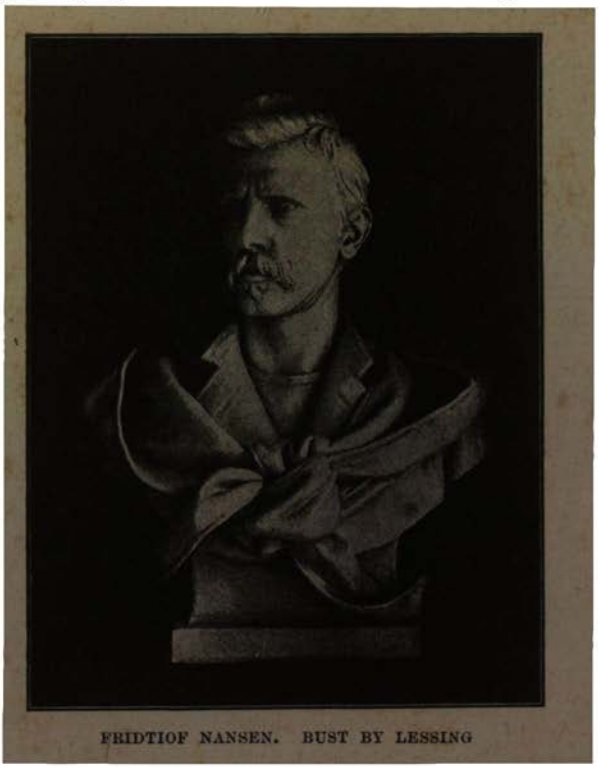
In the stretch of about 4,000 miles between the North Cape and the south-east corner of Labrador, passing by Greenland, we find the Atlantic base-line of the Polar Sea.

About the year 1000, this line, running south-west and north-east, may be said to mark the boundary of the geographical knowledge of the age. And for 500 years this frontier line remains stationary.

Such knowledge as there was, too, scarcely extended beyond those who spoke the language of the discoverers. It was not imparted to the rest of the world. The old Vikings very probably penetrated to polar altitudes which, after them, remained unvisited until the days of Davis and

Hudson. Even their discovery of America had to be done over again.

How little the voyages of the Scandinavians were known to the world at large is proved by this circumstance, among many others, that even in England, where Ottar Haalogalænding's voyage to Biarmeland had been put on record



FRIDTIOF NANSEN. BUST BY LESSING

by Alfred the Great himself, Willoughby and Chancellor's doubling of the North Cape and exploration of the White Sea, in the middle of the sixteenth century, was regarded by contemporaries as a new discovery, redounding to the special glory of the English nation, and comparable to the discovery of America or the exploration by the Portuguese of the ocean route to India.

This total lapse into oblivion of a recorded fact may partly be due, no doubt, to a very general scepticism as to travellers' tales. Even in ages which had the most limited means of acquiring trustworthy information as to unfamiliar and distant people and things, travellers were apt to find on their return a public which, while it would relish the strangeness of their stories, and sometimes swallow without criticism the wildest exaggerations and misunderstandings, would yet, at the same moment, with the narrowness of ignorance, reject what were perhaps the few really true details in their romantic stories.

The mediæval mind, in picturing to itself the Arctic world, could not get rid of the assumption of a 'great ocean' surrounding all the kingdoms of the earth. The new discoveries of land in the beginning of the sixteenth century led to a change in the common conceptions of the distribution of land and sea, which modified for the better even the current theories as to the undiscovered portions of the globe. These new discoveries filtered slowly and confusedly, in the form of rumours, into people's minds, and their ideas became rather chaotic. Some seem to see a polar ocean, others a polar continent. Opinion oscillates, at intervals of a few years, between the two theories. One map of about this date shows a North-West Passage, a sound which affords (so it states) an 'open way to the Moluccas'; another treats us to a North-East Passage. One typical theory represented the North Pole as surrounded by one or two circles of islands; and a map of the year 1587 assures us that the sounds between these islands never freeze, by reason of the strong inward current setting through them—they serve as outlets for the ocean. A map of 1570 shows a long sound

separating the northern regions of the known earth from the polar islands, between which, at convenient intervals, open straits lead to the Pole itself.

About the same time when the Scandinavian voyages to the western world ceased, and intercourse with Greenland was broken off—perhaps in the same year in which Columbus sailed his 'hundred leagues' from Iceland—his countryman Giovanni Gaboto (John Cabot) landed in Bristol.

A few years later, this true-born scion of the adventurous Genoese-Venetian race suggested as a task worthy of English seamanship, as yet but half-conscious of its mission, the finding of the shortest sea passage for English commerce to the rich Asiatic regions—a North-West or a North-East Passage.

The result shows how stimulating it is to have a worthy goal proposed for our efforts. Throughout the whole of the sixteenth century and more, Cabot's idea inspired the foremost seamen of the English nation, until Baffin declared the problem insoluble. But by that time English seamanship had overtopped that of all other nations, and supplied the most essential preliminary to a dominion over land and sea unparalleled in history.

In the year in which Cabot junior, Sebastian Cabot, set forth on the first of the north-west voyages, the year of the Reformation, 1517, the port of London possessed only four or five ships of more than 120 tons; in the second half of the same century, Francis Drake imitates Magellan's circumnavigation of the world, and over the wreckage of the Invincible Armada there sail into view the first squadrons of that vast fleet, whose carrying power is

equal to that of the shipping of all the other nations put together.

It is a tragic fact in history that from sons of Venice and Genoa—a Cabot and a Columbus—the impulses should have proceeded which were destined, in a rapid course of development, to lead to the decline of the splendid maritime republics.

The first main group of polar expeditions in modern times was inspired by mercantile interests and aimed at practical results. They may be roughly divided into north-westerly and north-easterly. The former end with the famous Franklin expedition and its sequels, in the middle of this century; the latter with that most fortunate of all polar expeditions, Nordenskiöld's voyage in the *Vega* in 1878–79.

The first series of north-west expeditions, that of the sixteenth century, to which the original initiative was given by Cabot, culminates in the discovery by Bylot and Baffin of that basin to which the name of Baffin Bay was given, because it was thought to be landlocked towards the north. On July 5, 1616, Bylot and Baffin, on board the *Discovery*, stopped at the entrance to Smith Sound, the southern end of that remarkable strait, some 300 miles long; between Baffin Bay and what we must, until further notice, call the Polar Ocean. This strait, widening out in the middle, bears some resemblance of outline to the channel between Europe and Asia at Constantinople, which is also divided into three parts, and is about half the length of Smith Sound. We shall presently have something to say of the splendid pioneer work of which Smith Sound has been the scene during the last three decades. In crossing over Baffin Bay, from Whale Sound to Jones Sound, some days after the above-mentioned

date, Baffin and Bylot also christened the Carey Islands, which, in the autumn of 1892, witnessed the catastrophe of the expedition headed by the two young Swedes Björling and Calstenius.

The practical results of the north-west voyages of the sixteenth century were the rich Newfoundland fisheries, the Hudson Bay fur trade, now the world's chief source of supply, and an immense development of the whaling trade, which has found its best hunting-grounds in the Greenland seas.

As Baffin found no practicable outlet from the gulf which bears his name, he pronounced it impossible to find a sea route to Japan in that direction. There is, therefore, an interval of 200 years without any attempt to penetrate into the Polar Sea on this side of the world, unless we except Cook's passage through Bering Strait.

The north-east voyages, with commercial objects in view, also begin in the sixteenth century.

The task of developing our acquaintance with the European-Asiatic Polar Sea has proceeded pretty evenly, and without any great interruptions. Our knowledge has progressed on this side in a much more steady sequence than on the other, where it has proceeded by a series of leaps in the dark and hazardous ventures. It was not until twenty-five years after McClure had made the round of America, that Nordenskiöld circumnavigated the Old World; but this conquest of the north-east passage was not the result of chance and guess-work, but of a careful and scientific synthesis of, and brilliant deduction from, the accumulated investigations of three centuries.

The last name on the polar record of the sixteenth century is that of one of the great pioneers of Arctic seamanship.

The English efforts after a north-east route had resulted in the establishment of commercial relations between England and Russia, but had been otherwise unsuccessful, and were therefore entirely dropped until Captain Wiggins, in our own day, resumed them. The Dutch in the meantime had taken up the running, and Willem Barents of Terschelling, one of the islands of North Holland, inaugurated, by his heroic battle with the polar winter, what we may call the series of great Arctic campaigns.

Wintering in the Arctic regions is no longer an unusual or a particularly dreaded exploit—that is to say, when the necessary preparations for it have been carefully made. The present age has succeeded in minimising the difficulties of travel and sojourn in the Arctic regions; but, to say nothing of the immense advantage afforded by the steam-engine and by improved weapons and food-stuffs, it is precisely the sum of the experiences of his predecessors, often bought with their lives, that enables the modern explorer to emerge victorious from the dangers of the far north.

The Arctic winter overtook Barents almost unprepared. For ten months he and his crew of seventeen in all lay fast in the ice at the north-east corner of Nova Zembla. They had built themselves a hut on land, partly out of driftwood which they found in great plenty. Even in September the ice was so hard that they could not bury a dead comrade, and had the greatest difficulty in building their hut. When, after the fashion of carpenters, they would try to hold nails in their mouth, the iron at once froze on to their lips and tore skin and flesh away with it. They had to work with their weapons always at hand, on account of the inquisitive polar bears, which, with their clumsy firearms, they had great difficulty in keeping off. Strangely enough, it did not occur to them

to eat their flesh; but they burnt the fat in their lamps. The long night, lasting for three months in this latitude, is one of the greatest horrors of the Arctic winter. 'The circle of light around his lamp becomes a man's whole world.' There were two inches of ice on the interior walls of the hut, and the clothes they wore 'were as white as the peasants' cloaks at home when they reach the city gate early in the morning after having driven in their sledges all night through.' The snowfall was at last so great that the chimney became their only means of communication with the outer world. It is probable, however, that the phlegmatic Dutch character is better adapted than that of other nations for facing the hardship and monotony of such an experience; and where there is humour there is health. They cast lots for 'the kingship of Nova Zembla,' and the cook, on whom the lot fell, was duly elevated to that dignity.

Shortly after they left their winter quarters Barents died, meeting his death like a hero, with the chart before him and with words of far-seeing counsel for his surviving comrades, who had set forth, with the invalided mate on their hands, to make the voyage back to Europe in open boats.

Very different are the conditions of life during a winter on board a ship drifting in the ice—such a winter, for example, as fell to the lot of the Austro-Hungarian expedition of 1872-73 in the same part of the Polar Sea. Payer thus describes the terrible pressure of the ice: 'Like the mob in a revolution, the whole of the ice seemed to rise against us. Mountains towered up menacingly over the level plains, and the light crackling noise became first a ringing, then a rumbling, then a crashing, until finally it swelled into a furious and myriad-voiced uproar.' More and more ice collects under the ship, which begins to be lifted out of the

sea. Measures are taken in hot haste to enable the crew to leave the ship at the shortest notice, although the state of the ice around seems to render it impassable for either men or boats. It appears inevitable that the ship must be crushed unless it is sufficiently forced upwards by the ice from underneath. All the timbers crack and groan as though in a conflagration; and this intense pressure upon the ship, with its corresponding pressure upon the spirits of the crew, is repeated almost every day for a hundred and thirty days, often several times in the twenty-four hours, and almost always in pitchy darkness. The whole ship's company slept in their clothes. At the slightest alarm, the sleepers would awaken and hurry on deck ready for a start.

In the confinement of shipboard, and unable to make any considerable excursions on the ice around, men suffer terribly, especially in the month-long darkness, from monotony and the lack of adequate exercise and changing occupations. 'No amount of habit reconciles a civilised man to the sunless desert; he will always feel out of his element in a climate against which he has to battle incessantly, the natural habitat only of a few animals and human beings who pass their existence in eating and sleeping, and have no recollection of happier circumstances. Contempt for the cold and the habit of dispensing with comforts are only subsidiary helps towards self-preservation. The true protection lies in incessant work.'

We owe to the explorer Kane another moving picture of winter life in the Arctic regions. The 'Second Grinnell Expedition' of 1853–55 also wintered on board ship; but the ship lay ice-bound in a harbour on the southern shore of Kane Basin in Smith Sound. Kane gives a quite artistic description of the preparations for the winter, and of the

monotony of daily life on board. We see him taking his observations in the carefully constructed astronomico-magnetico-meteorological observatory on shore, sitting on a box, dressed in sealskin trousers, a dog-skin cap, a reindeer-skin jacket, and walrus boots, while the cold is so intense that not only his breath, but the mere warmth of his face and body is sufficient to cloud the sextant-arc and glasses with a fine hoar-frost. 'London Brown Stout, and somebody's Old Brown Sherry freeze in the cabin lockers; and the carlines overhead are hung with tubs of chopped ice, to make water for our daily drink. Our lamps cannot be persuaded to burn salt lard; our oil is exhausted, and we work by muddy tapers of cork and cotton floated in saucers. We have not a pound of fresh meat, and only a barrel of potatoes left. Not a man now, except Pierre and Morton, is exempt from scurvy; and, as I look round upon the pale faces and haggard looks of my comrades, I feel that we are fighting the battle of life at disadvantage, and that an Arctic night and an Arctic day age a man more rapidly and harshly than a year anywhere else in all this weary world.'[1]

And with the cold and the darkness comes disease—frost-bites, tetanus, scurvy—and then death, and burial, or rather 'putting aside,' 'with a little snow strewn on the coffin.'

Here Hudson perished, miserably deserted; here the two brothers Cortereal and the two brothers Frobisher went 'missing' for all time; here Barents and Bering laid down their lives; here Franklin, who had escaped the bullet-storm at Copenhagen and Trafalgar, fell at the head of his picked

[1] Kane, *Arctic Explorations in the Years* 1853 to 1855, Vol. 1, p. 173 (Philadelphia, 1856).

company; here Hall has for twenty-five years slept his last sleep on the verge of the polar ice under the star-spangled banner and a British memorial tablet. Who can reckon the multitude whom cold, darkness, toil, hunger, and scurvy have done to death in these regions, where titanic nature does not murder the human pigmy openly as in the fever-breathing tropics, but slowly petrifies its victims in a boyg-like[1] embrace.

After the death of Barents, the disappearance of Hudson, and Baffin's renunciation, there comes a long lull in Arctic exploration. A lull of two hundred years—for it is not until the present century that the search for the Pole recommences in earnest. The Arctic record of the intervening years consists chiefly of the explorations of the north coast of the great continents which we owe to Cheliuskin, Bering, Mackenzie, and others.

This century has been the age of scientific polar exploration, undertaken, not in search of gold, not in order to shorten 'the passage to Japan,' but, in the words of the Admiralty sailing-orders to Captain Nares, 'for the advancement of science and natural knowledge.' It is characteristic, then, that in this century the two chief impulses towards the solution of the great polar enigma should have come, not from men of action, but from scientific students. 'Sooner or later,' writes Nordenskiöld, 'the thirst for knowledge, which has impelled man to measure the vast distances of the fixed stars, and by the help of spectrum analysis to ascertain their component elements, could not but impel him to make every possible sacrifice in order to investigate the

[1] The 'boyg' is a formless, invulnerable monster encountered by Peer Gynt, who afterwards addresses the Sphinx by the name of 'boyg.'—*Peer Gynt*, Act II. Sc. 7.

configuration of the little grain of dust steeped in salt which we inhabit.'

It is true that these 'arm-chair geographers' hoisted misleading signals.

> To know the chart is one thing, but
> To sail the ship's another;

The fact remains, nevertheless, that the immense advances which have been made during this century towards a solution of the polar mystery may be grouped in two series: that to which the English geographer Barrow gave the first impulse, culminating in the Franklin expeditions; and that which was inspired by the German geographer Petermann, culminating in the fixed-point investigations of the 'eighties. The English geographer strongly backed the American route to the polar regions, the German gave the whole weight of his authority to the routes by the north coast of Europe and Asia.

Finally, we see how Nansen's crossing of Greenland, in 1888, and still more the setting forth of the *Fram* in 1893, have had the electrical effect of battle-cries. It seems, however, as though the struggle with the ice demon were henceforth to assume the character of a guerilla warfare; the *Fram* expedition alone, like the earlier polar enterprises, has the air of a formal campaign.

What sort of a world, then, is this polar world, that it should be worth the risking of so many lives?

It is an unknown world, a *meta incognita*, as the Queen of England called the northern part of America in the days when Frobisher, Davis, and other leaders of the new-born British seamanship made their names immortal, and opened new channels for human enterprise and love of knowledge.

Queen Elizabeth applied the term *meta incognita*, 'a

mark and bound hitherto [that is in 1577] utterly unknown,' to the first historically recorded landfall in the maze of islands and channels between Greenland and America. The name *Meta Incognita* is still given to the southern peninsula of Baffin Land, close to Hudson Strait.

The main reason why this treacherous and perilous island-labyrinth has proved so tempting from the first, and has been the scene of the greatest labours and the greatest sacrifices, is that until Cook, at the end of last century, explored Bering Strait, the passage to the rich regions beyond the Pacific was thought to be incomparably shorter by the north of America than by the north of Europe and Asia.

Cabot and his contemporaries conceived the northern part of America, the present British America and Alaska, as an ocean more or less sparsely sprinkled with islands. Even down to a century and a half ago, the north coast of America was represented as a slightly curving south-westerly line passing from the north-west corner of Hudson's Bay to Cape Blanco on the Pacific coast, between San Francisco and Vancouver.

The second reason why the advance towards the North Pole has, during the greater part of the present century, chosen this route, is that, up to very high latitudes, Greenland presents a well-explored coast line. Here a mighty tongue of the polar world stretches down into the temperate zone, half as far again as, in Norway, a tongue of the temperate world stretches in the opposite direction into the polar regions. Thus Baffin, on the American side of Greenland, had two centuries and a half ago reached a latitude which was not attained upon the European side until Payer, in our own days, reached it by means of a sledge journey during the *Germania-Hansa* expedition.

Between Labrador and Greenland three passages present themselves.

One is named after the famous Hudson, who, after many Arctic voyages, one of them aiming at the Pole itself, sailed into this strait on July 1, 1610. On August 3, at the north-west corner of Labrador, a wide expanse of water opened out before the explorer's eye. As it was three times as large as the Baltic, we cannot wonder at his concluding that he had entered the Pacific Ocean. That was Hudson's last voyage; his mutinous crew stated, on their return to England in the following year, that they had put Hudson, his young son, and seven others on board a boat at sea after the hardships of the winter were over, and the homeward voyage was already begun.

Between the northernmost point of the great Baffin land and Greenland, Davis Strait and Baffin Bay branch out in the shape of sounds towards the west and the north.

The western sounds, which have been explored chiefly in the course of the search for the hapless Franklin expedition, radiate from the little central basin which bears the same name as the basin explored by E. Astrup [1] to the north of Baffin Bay. Around that central basin, Melville Sound, the Franklin tragedy was acted out.

In May 1845, Captain Sir John Franklin put to sea with the *Erebus* and the *Terror*, two frigates already tested in polar voyages, and provided, moreover, with what was in those days a comparative novelty, steam motive-power. As we have recently seen a promising Arctic expedition give a stimulus to Antarctic exploration as well, so in those years

[1] The latter has been called Melville Bay after a Scotch family, commemorated in geographical nomenclature with bewildering lavishness. We should prefer 'Astrup's Bay.'

the successful Antarctic expedition of the elder Ross had given a new impulse to Arctic exploration as a whole.

For five years nothing was known of the fate of Franklin and his two ships, with their picked crews of a hundred and thirty men in all. Energetic search operations were set on foot; no fewer than fourteen ships took part in them, of which ten were despatched by the English Government. At last, in 1850, the *Prince Albert*, which had been fitted out by Lady Franklin herself, returned with some fragments of news. The first year's winter quarters of the Franklin expedition had been discovered, in the so-called Union Bay, near the south-west corner of North Devon, at the southern entrance to Wellington Channel. Three graves with names upon them were the solitary but eloquent traces left behind by the expedition.

Although in the following years several vestiges of the expedition were discovered in the coast regions between the Coppermine River and the Great Fish River, yet the fable gained some currency that the explorers might possibly, one fine day, make their appearance on the north coast of Siberia!

In the same year in which the British Admiralty gives up its attempts to learn the fate of the Franklin expedition, after three British war-ships had spent three years in the search and come home with no news—in the same year in which McClure, the discoverer of the so-called North-West Passage, returns to England, after having traversed the whole North American Archipelago without finding any trace of Franklin—there arrives a letter from an agent of the Hudson Bay Company containing definite intelligence of Franklin's fate. An Eskimo, encountered in April 1854, on the Boothia Peninsula, east of the estuary of the Fish River,

declared that a party of white men, 'kabloonans,' had died of starvation on the banks of a great river to the west. This was said to have happened four winters ago. Certain Eskimo families occupied in seal-hunting near the north coast of the great island known as King William's Land—such was the purport of the letter—came upon a band of forty white men proceeding southward over the ice with boats and sledges. The Eskimos could not understand what they said, but concluded from their gestures that their ship had been crushed by the ice, and that they were now going where they hoped to find game to live upon. They bought some seal's flesh from the Eskimos. Later on in the spring more than thirty bodies and a few graves had been discovered upon the continent, and five bodies upon a neighbouring island. Some lay in tents, others under an overturned boat, others in the open. The report sent to the Admiralty also enumerates certain small objects which the Hudson Bay Company's agent had discovered among the Eskimos: a silver spoon, with arms and the letters F. (?) R. M. C. (J. R. M. Crozier, Captain of the *Terror*), a silver fork marked H. D. S. G. (Harry D. S. Goodsir, Assistant Surgeon on board the *Erebus*), a round silver plate with the name 'Sir John Franklin, K.C.B.' engraved upon it, and so forth.

There could be no doubt that Franklin's party had reached the mouth of the Fish River. They would thus be about seven degrees due south of their first winter quarters—that is to say, they had covered in between three and four years a distance equal to that from the south point of Spitzbergen to Tromsö. The mouth of the Great Fish River lies immediately within the Arctic Circle.

Another agent of the Hudson Bay Company—the English

Navy was just at this time (1854-55) engaged in the Crimean War—found further traces of the expedition about the Fish River, some on an island in its estuary, some (and these skeletons) buried in the sand upon its banks.

Not until 1859 does any detailed information come to hand. In that year the famous sledge-traveller, McClintock, reached an Eskimo camp on the west side of the Boothia Peninsula, immediately south of the Magnetic Pole. The Eskimos reported that several years back the crew of a great ship, which had been ice-bound off the coast of King William's Land, the great island right opposite the Boothia Peninsula, had made their way to the Great Fish River, where they had perished. On the south coast of King William's Land, McClintock came upon a skeleton clothed in rags, lying as though the man had fallen forwards while proceeding towards the south-east; and about the same time, on the north-west coast, another sledge-party at last found a document proceeding from the commanders of the expedition. This, the only communication ever received from the lost explorers, consisted solely of two pieces of writing on one of the blank sheets which English exploring ships carry with them for the purpose of putting in bottles, bearing a printed request, in six languages, that the finder will send the paper either to the Admiralty in London or to the nearest Government official of his own country. On this blank form Sir John Franklin himself had first written, under the date May 28, 1847, a statement to the effect that the expedition had wintered at the above-mentioned place. Then, on the margin, the two officers next in command had added a further statement, under date April 25, 1848: they had some days before left the two ships in the ice to the northward, after having been frozen in for a year and eight

months. Franklin himself had died the year before. They intended to set forth the next day for the Great Fish River.

Neither Hall—who also made a search on King William's Land in the 'sixties, and even brought home with him a skeleton which was identified as that of one of Franklin's lieutenants—nor Schwatka, on his remarkable sledge journeys in the 'seventies, could discover any further documentary traces, though Schwatka ascertained that manuscripts had existed, but had been destroyed by the Eskimos. It was also found that one of the derilect ships had drifted southwards through Victoria Strait on the west side of King William's Land, and sunk in the eastern part of the little bay in the continent in which this strait debouches. As for the crews, there are indications that hunger drove them to cannibalism, and it is not impossible that the Eskimos may have done away with some of their enfeebled and unwelcome guests; until in the end, as we have seen, a few reached the continent, where the last of all perished, bearing the precious diaries, which the Eskimo children afterwards tore in pieces.

'Franklin and his followers secured the honour for which they died—that of being the first discoverers of the North-West Passage.' So says a leading English authority, and not without a certain justification. But the final conquest of the North-West Passage must be assigned to McClure, who set forth through Bering Strait with the double purpose of discovering the passage and seeking for Franklin. On October 26, 1850, thirty years after Parry had made his way westward to the south end of Melville Island, McClure, from a high point on the shore of Prince of Wales Strait, where his ship the *Investigator* lay hopelessly ice-bound, *saw* the North-West Passage—looked, that is to say, toward Melville Island, over

the frozen Sound which did not, as his book expresses it, 'connect' the two points, but rather obstructed, and will doubtless for ever obstruct, all advance either from the East or from the West. A year and a half afterwards, in 1852, when the *Investigator* had long got free from the ice, and had made its way backward to the north coast of Banks Land, McClure completed the connection by setting forth from his new winter quarters, and traversing on sledges the strait between Banks Land and Melville Island, which had been reached from the east by Parry, and after him, in 1851, by McClintock. The meeting between McClure and McClintock's expedition at last took place in 1853; whereupon all the expeditions which had been sent to investigate the Sounds were brought home, in 1854, by ships despatched for the purpose.

During the last half-century, the passage of Smith Sound, that characteristic strait to the north-west of Greenland, has been forced, as it were, inch by inch, each advance being more dearly bought than the last.

Baffin, as before stated, saw Smith Sound, though John Ross, two hundred years after him, mapped it as closed. In 1852 one of the Franklin search vessels, under Captain Inglefield, penetrated half-way through the Sound, and Inglefield was led to conjecture an open waterway stretching right to Bering Straits and Siberia. Therefore, in the following year, the no less energetic than fantastic Kane set forth upon his track. His ship was barely able to enter the Sound, but his sledge parties, under Hayes[1] and Morton, made their way over that expansion of the Sound which takes its name from Kane, and along Kennedy Channel—which was then free from ice—an advance of almost three degrees beyond what

[1] Who also commanded the Sound Expedition of 1861.

had hitherto been attained. Morton imagined that he both saw and heard open sea stretching to the North Pole. 'His ears were gladdened by the novel music of dashing waves.'[1] Six years later, Hayes, with his sledges, pushed on to about the point which Morton had really seen. In 1871, Hall made his way on board the *Polaris* nearly a degree further north—that is to say, almost through Robeson Channel, the last narrow portion of the Sound before the land trends outward on both sides. After Hall's ship had drifted southward through Kane Basin and Smith Sound, the crew were separated during a disembarkment off Whale Sound, and nineteen men were carried away on an ice floe, upon which they drifted from October 15, 1872, till April 30, 1873, through Baffin Bay and Davis Strait, almost to the eastern extremity of Labrador, where they were picked up by a whaler. The length of this voyage on an ice floe was equivalent to the distance from the south of Spitzbergen to Hamburg. Equally protracted in point of time, if not of distance, was the drift-voyage of the German explorers, the crew of the *Hansa*, on the other side of Greenland three years earlier.

But to return to Smith Sound and its extensions. At the north-west mouth of Robeson Channel, during the winter of 1875–76, a three-masted ship lay jammed obliquely in the ice, off a barren open shore covered with ice hummocks. This was the *Alert*, under the command of Captain Nares, R.N.

The Admiralty's orders ran thus: 'The highest northern latitude . . . if possible the North Pole!' 'As the expectations which were entertained regarding our reaching the North Pole were not realised,' wrote Nares, 'I must, in justice to the gallant men whom I commanded, express my firm

[1] Kane, *op. cit.* vol. i. p. 305.

conviction that it was due solely to the fact that the North Pole is unattainable by the Smith Sound route.'

Even at the moment of separation, when the *Alert* steamed ahead and left its consort, the *Discovery*,[1] stationed in the bay named after it, Nares thought that everything promised well for the solution of the problem. Robeson Channel was then supposed to be a narrow sound between the little Hall Basin and a similar basin to the northward.

They went ahead as fast as possible until they reached 82° 24′ N. lat., the most northerly point as yet (?) attained by any ship; but there the ice beset them again, and this time in good earnest.

'It is either affectation or want of knowledge,' says Sir George Nares, 'that can lead any one seriously to recommend an attempt being made to navigate through such ice. . . . Steamers are enabled to penetrate through a broken-up pack which the old voyagers, with their sailing-vessels, necessarily deemed impassable. . . . But no ship has been built which could withstand a real nip between two pieces of heavy ice.'[2]

This was written in 1878, before the *Fram* was thought of.

The *Alert* had reached a point somewhat higher than Independence Bay on the east coast of Greenland. And here, near Cape Sheridan in Grant's Land, she lay in winter quarters for eleven months in a temperature that sometimes fell to − 58·75° C. (−73·75° Fahr.).

In the course of extensive sledge journeys, covering about thirty degrees of longitude, which at the eighty-third degree of latitude means about 300 miles, Lieutenants Beaumont, Aldrich, and others explored the most northerly coasts

[1] The second of the name; the first was Bylot and Baffin's.

[2] Nares, *Voyage to the Polar Sea*, vol. i. p. 126.

of the known world, east and west of the mouth of Robeson Channel; and on May 12, 1876, Markham and Parr reached 83° 20′ 26″ N. lat., about 63° west of Greenwich.

Markham, at the head of a sledge party, had set himself to fight his way northward over the ice as far as possible. Camping at night upon ice floes, cutting their way with hatchets and spades through moraines of giant ice blocks, sometimes blinded by the snow, sometimes up to their waist in snow-drifts, with Lieutenant Parr and the pioneers clearing the way, and the others toiling after them with the sledges, reeling, slipping, falling, recovering—so they went ahead. 'One thing is pretty certain, we cannot have it much worse, and this is a consolation.' Well said, gallant seaman! And the north wind at — 55° C. (— 67° Fahr.)! 'It almost cuts one in two.' And then the fogs!

The shores are of course barricaded by moraines of ice blocks piled one upon another. From Cape Joseph Henry, where Markham left the coast-line and started due northward, with provisions for sixty-three days, he looked forth over an irregular sea of ice with small but thick floes and great blocks, which had hurtled and splintered against each other, often ranged in piled-up ramparts around floes of greater or less extent. Further out from the shore the floes were not thus walled around, but were exceedingly lumpy and jumbled up, often tilted at very awkward angles, with seemingly new-frozen patches between them, and with treacherous snow-covered clefts. One floe was estimated to measure a mile and a half from north to south, and about seven miles in circumference. Ice blocks were found containing patches of mud and clay, proving that they had pretty recently been in contact with the land. During the journey on the ice, tracks of wolves and lemming were ob-

served, and there were signs of hares nearly twenty miles from land.

The exceedingly low temperature when the wind was from the north dispelled in Markham's mind all idea of an open sea to the north or north-west. The alternations of opinion, from one year to another, on the question of the open polar sea, remind one of the divergent reports of travellers in Australia, one of whom will find an oasis on the very spot where another, the year before or after, sees only the desert in all its desolation.

Markham's sledge party had at last to retreat, worn out by the incessant toil of digging its way through the pack ice, while five of the little band of seventeen were disabled, 'and as many more showed decided scorbutic symptoms.' Their tents at night were more like hospitals than the abodes of strenuously toiling men. With flags flying and boat-standards displayed, they took a final observation which showed their latitude to be 83° 20′ 26″ N., or 399½ miles from the North Pole.

Of the view in brilliantly clear weather from Mount Julia, an elevation of 2,000 feet near Cape Joseph Henry, Nares writes as follows: 'To the northward no land, or the faintest appearance of land, was visible. The interminable ice pack appeared from our lofty station to consist of small floes hedged round by broad barriers of rough ice, until, in the extreme distance, it blended with the horizon; not a pool of water or the faintest appearance of a water-cloud was to be distinguished within the range of our vision, which embraced an arc of 160 degrees. We were perfectly satisfied that no land of a great elevation exists within a distance of eighty miles north of Cape Joseph Henry, and none at all within fifty miles, which from our

outlook bounded the visible horizon. We may rest assured then, that . . . . to the 84th parallel of latitude stretches the same formidable pack which was encountered by Markham and his companions. Whether or not land exists within the 360 miles which stretches from the limit of our view to the northern axis of the globe is, so far as sledge-travelling is concerned, immaterial. Sixty miles of such pack as we now know to extend north of Cape Joseph Henry is an insuperable obstacle to travelling in that direction with our present appliances; and I unhesitatingly affirm that it is impracticable to reach the North Pole by the Smith Sound route.'[1]

It was about this time that the polar traveller Weyprecht proposed an international enterprise for the simultaneous carrying out of a series of scientific observations at various fixed stations in the polar zone.

The American expedition despatched under Lieutenant Greely, in pursuance of this plan, has attained somewhat tragic renown. In August, 1881, it installed itself in Discovery Harbour in Grant's Land, near the Robeson Channel. From September 11, when the transport which accompanied it returned to Newfoundland, nearly three years passed before anything was heard of, or from, Greely and his party, the relief expeditions of 1882 and 1883 having failed to reach them. It was not until the third year that seven exhausted survivors (out of five and twenty) were found, and six of them brought home.

Nothing but a full reproduction of the picture given day by day in Greely's own diary of the miseries of existence in the midst of cold, hunger, sickness, and helplessness, would convey an adequate idea of the horrors of an Arctic disaster.

[1] Nares, *op. cit.* vol. i. p. 325.

On June 6, 1884, Lieutenant Greely sentenced a soldier named Henry to be shot for having stolen some provisions—to wit, some shrimps out of the general mess-pot, and a number of sealskin thongs. He had been previously detected in the same offence, and warned; 'for,' writes Lieutenant Greely, 'it was evident that if any of the party survived, it must be through unity and fair dealing, otherwise everybody would perish.' A few days afterwards the military surgeon, Dr. Pavy, died, his end being hastened by his use of the narcotics to which he had access. 'Everybody is now collecting reindeer moss, tripe de roche, and saxifrage, all of which it is possible for us to eat.' One of the dying men, who was also suspected of having stolen from the common store, inserted a protest in his diary: he had only eaten his 'own boots and part of an old pair of pants'!

Lieutenant Lockwood, who died before the rescue, together with Sergeant Brainard and an Eskimo named Christiansen, had in the meantime (May 1882) hoisted 'the glorious stars and stripes' on Lockwood Island, off the north coast of Greenland, in 83° 24′ N. lat., and thus reached the furthest north point as yet trodden by human foot within the knowledge of civilised mankind.[1] Markham had six years before reached a point a little more than four miles short of this. Lockwood wrote in his report: 'To the north lay an unbroken expanse of ice, interrupted only by the horizon. Could see no land anywhere between the two extreme capes . . . referred to, though I looked long and carefully, as did Sergeant Brainard.' Mr. Brainard, too, wrote as follows: 'Toward the north the Polar Ocean, a vast expanse of snow and broken ice, lay before us. For

[1] The distance from the North Pole is equal to the distance from Christiania to the Arctic Circle.

sixty miles our vision extended uninterruptedly, and within it no signs of land appeared. The ice appeared to be rubble, the absence of large palæocrystic floes being remarked upon.'[1]

There is no need to enlarge at this point upon the importance of Greenland as a link in the chain around the North Pole. It is a matter of common knowledge that Nansen's successful expedition of 1888 gave a potent stimulus to Arctic enterprise, while it made the reputation of the dauntless and skilful explorer to whom these pages are dedicated. Here, however, a word of mourning may not be out of season for our second Greenland explorer—Eivind Astrup—who, but for his untimely death, would doubtless one day have taken his place with Markham, Nordenskiöld, Peary, and Payer in the front rank among Arctic pioneers.

The principal expeditions along the east coast of Greenland have been fully described in a work no doubt known to most readers of these lines—*The First Crossing of Greenland.* The most notable addition which has since been made to our knowledge of this particular region is due to the exploration by Peary and Astrup, in 1892, of a small stretch of the north-eastern coast, at about 82° N. lat.

One of the most important and serviceable outposts towards the North Pole is Spitzbergen, which may this year celebrate the third centenary of its discovery by the beforementioned Dutch voyager, Willem Barents. The Spitzbergen islands were, until the 'fifties, the most northern land ever reached by civilised man; and if we take into account

[1] Greely, *Three Years of Arctic Service*, vol. i. chap. xxv.

the results of Scoresby's, Parry's, and Nordenskiöld's explorations to the north of the islands, we find that their record was not broken until twenty years ago. Spitzbergen offers, every summer, a more advanced point of departure than is attainable anywhere else with equal security.

It was in 1827 that Parry, with two boat-sledges, set forth northward from Spitzbergen. He and his party went ahead for a month, when it proved that they were drifting backward on the ice faster than they could shove their boat-sledges forward. They had then made their way nearly three degrees northward—to 82° 45′, a latitude which was not outdone till fifty years later, and which even Lockwood in 1882 did not pass by so much as one degree. This was the first use of sledges in polar exploration.

On much the same meridian, the 18th or 19th east of Greenwich, on which Scoresby in 1806 and Parry in 1827 had succeeded in passing the 81st degree of latitude, the Swedish steamship *Sophia*, with Nordenskiöld on board, reached in 1868 the highest latitude up to that time attained by any ship—viz. 81° 42′. 'We have reached a point,' writes Captain von Otter, 'beyond that at which any one has hitherto been able to prove that he took the altitude on his ship's deck.' This point was reached only by ploughing their way forward through the ice; and when the ship put about, 'there was no direction in which a man, with a boat-hook in his hand, could not have gone at least a mile upon the ice-floes.' In this expedition Lieutenant Palander, afterwards so well known, was second in command; and, besides Nordenskiöld, several Swedish men of science took part in it.

At mid-day on August 30, 1873, in 79° 43′ N. lat. and 59° 53′ E. long.—that is to say, north of Nova Zembla—the

crew of an Austro-Hungarian man-of-war, the *Tegethoff*, sighted land to the north-west, looming through a veil of mist. A glittering array of Alpine summits was suddenly revealed to their astonished gaze.

At that time this fine ship, with which Austria had joined in the international race for the North Pole, had drifted in the ice for more than a year northward of Nova Zembla. It had on board the Payer-Weyprecht Expedition, fitted out at the expense of Count Wilczek, to attempt the route to the North Pole between Spitzbergen and Nova Zembla, recommended by Petermann, the geographer. Not until two months after the first sight of land did they succeed in making their way from the ice-bound ship to the new Franz Josef Land, one of the most interesting discoveries of the last two centuries.

For fully two degrees of latitude the Austrians pushed on northwards over the group of islands, with their intervening sounds, up to Crown Prince Rudolph's Land, with its two beacons on its western extremity. They gave the name 'Cape Fligely' to the northernmost point they reached, in latitude 82° 5′—about the same latitude reached by the Peary-Astrup Expedition in North Greenland in 1892.

The open water along the coast below this cape was not really open sea, but a 'polynja'[1] enclosed by old ice. Payer has no belief in any open polar sea, 'that antiquated hypothesis.' A broad white plain stretched to the horizon, broken only by two distant blue Alps to the north, which they called King Oscar's Land and Petermann's Land.

Leaving the ship behind in the ice and dragging their boats, the crew of the *Tegethoff* set forth from this distant polar archipelago. They journeyed for almost three months

[1] A Russian term for a pool amid the ice.

over the ice, until at last, about two days north of Nova Zembla, they were able to launch their boats. After skirting the coast of Nova Zembla for a fortnight, they fell in with some belated Russian sealers, which conveyed the party of three and twenty to Vardö.

In the winter of 1882–83 two ships lay side by side in the Kara Sea—the Norwegian steamship *Varna*, with a Dutch scientific expedition on board, and the Danish *Dijmphna*, Lieutenant A. Hovgaard in command. Hovgaard, who had taken part in the *Vega* expedition, set forth with the idea of making for the North Pole, and also of bringing aid to the missing *Jeannette*; but when the fate of the *Jeannette* was ascertained, he contented himself with an attempt to push forward by the Cape Cheliuskin route. If he could get as far as Franz Josef Land, he would at least have established a basis for further advance. At any rate, he thought, this route would have the support of a coast-line further north, and might lead over to the northern opening of Smith Sound. He could not, however, escape from his involuntary imprisonment in the Kara Sea, and had to content himself with the interesting observations as to winds and currents which it enabled him to make.

In 1874 Captain Wiggins began his attempts, indefatigably continued year after year, in spite of all misfortunes, to establish a commercial route between England and Siberia through the Kara Sea.

On June 21, 1878, the *Vega* sailed from Tromsö; three weeks later it left Dickson Harbour, at the mouth of the Yenisei River; on August 19 it anchored off the northernmost point of the Old World, Cape Cheliuskin, 'the most monotonous and desert scene in all the northern latitudes,' writes Nordenskiöld. From September 27, 1878,

to July 18, 1879, the ship lay ice-bound only two days' sail from Bering Strait, which it passed on July 20.

Thus was the North-East Passage completed. A continuous base-line was at last provided for our knowledge of the Arctic seas, and a new and virgin region of the polar world was laid open to tempt investigation.

I mean, what may be called the Pacific side, where Bering Strait, on the same meridional circle as Trondhiem, lies at about the same distance from the Pole. I mean that great tract, with the New Siberia Islands for its middle point, where, to the north-east of Asia, we seem to divine the rising contours of unknown polar islands like those to the north-east of Europe and of America.

As this segment of the Polar Circle, stretching from the mouths of the Obi and Yenisei, with the New Siberia Islands and Bering Strait in the middle, to the delta of the Mackenzie River, has always been the most remote from European and American enterprise, there is nothing remarkable in the fact that, on this side, we have looked no further into the polar world than the eye can see from the northernmost headland of the continent, and, indeed, on the meridian of Bering Strait, no further than to the latitude of Bear Island on the European side. Before the voyage of the *Jeannette*, no ship is known to have penetrated much beyond a latitude equal to one degree north of the North Cape, or to the latitude of Upernivik on the west coast of Greenland.

And yet the outposts of civilised humanity had reconnoitred the said New Siberia Islands as much as two hundred years ago, and ever since the time of the Thirty Years' War small bands of Russian sealers had patrolled the sea and shore all along the north coast of Asia.

In the same year in which Cheliuskin dismounted from his sledge at the North Cape of Asia, the north-west corner of America, Alaska, came within the range of geographical knowledge. But the limits assigned us, which we have already exceeded, forbid any detailed account of the progress of exploration on these inhospitable shores.

We cannot, however, omit a passing mention of the great expedition in the first half of last century, which made the names of Bering and Cheliuskin world-famous. In the whole range of polar exploration, and even, one may say, of scientific travel as a whole, nothing can compare with this pioneering enterprise of the Russian Government, unless it be the enormous efforts and sacrifices made by the English Government and people in the search for Franklin.

What has been effected on the Siberian side by far-seeing political considerations (here, as in so many other cases, inextricably interwoven with the interests of science and of commerce) purely mercantile considerations have brought about on the American side. The exploration of the north coast of Siberia and its adjacent islands was brought, for the moment, to a satisfactory conclusion by the expedition under Wrangel and Anjou in the eighteen-twenties. It is a little more than a hundred years since the principal points on the north coast of America were determined with tolerable exactitude by land exploration. Here, as on the Asiatic side, further research has filled in gaps and gradually completed the chain of knowledge. This has been effected especially by the simultaneous expeditions of Collinson and of McClintock eastward from Bering Strait in search of Franklin.

Bering Strait was not really known to geography before 1730. Deschneff and Bering had explored the eastern

extremity of Asia, and ascertained that there existed a waterway between the Arctic Ocean and the Pacific. But that this connection took the form of a strait they had not discovered.

How 'new,' in reality, is the world we live in!

Only a century before the *Vega* took its year-long rest during its circumnavigation of the Old World, James Cook, on his last voyage, had sailed into Bering Strait, and had tried to force his way ahead both to the east and to the west, but without any particular result.

In 1849, Kellet landed on Herald Island. In 1867, Wrangel Land received its name from Th. Long.

In order to make the nations pull themselves together, and attack in earnest the investigation of this vast region, we shall perhaps need the stimulus of a strong emotion such as alarm for the fate of some heroic explorer. Such an emotion was powerful enough to inspire the search for the Franklin expedition during a space of two-and-thirty years. Such an emotion set great forces to work in the effort to succour the *Jeannette*. Let us hope, however, that, in the present instance our definition of polar history as a record of 'victorious defeats' may justify itself in the sense that the defeat of the *Dijmphna* and the *Jeannette* may result in the victory of the *Fram*.

Of the disaster of the *Jeannette* some account must be given, if only because its history has a curious bearing upon that of the expedition which has called forth these lines. The *Pandora*, which had been bought by the well-known newspaper proprietor, James Gordon Bennett, and re-named after his sister, was at first designed to strike an independent course for the North Pole through Bering Strait; but as the year 1879 brought with it a keen interest in the question,

'What has become of the *Vega* and Nordenskiöld?' the *Jeannette* was also commissioned to attempt its solution.

In the last days of August, 1879, the *Jeannette*, under the command of Lieutenant G. W. De Long,[1] with a ship's company (all told) of three-and-thirty men of various nationalities, steamed through Bering Strait, five weeks after the *Vega* had steamed out into the Pacific!

Over two years passed without any news from De Long or his ship. But it was provisioned for three years and equipped with everything that science and the wealth of a great newspaper-proprietor could supply—Edison himself had superintended the electric light installation. Moreover, it had on board two Eskimo hunters, seven sledges, and forty dogs. What disaster could possibly overtake this first serious attempt to reach the North Pole by way of the Pacific!

In December, 1881, Europe was startled by tidings from the Yakutsk district that a party of De Long's men had in September arrived at the mouth of the Lena in an exhausted condition. Not till March, 1882, were the bodies of De Long himself and eleven of his comrades discovered.

The survivors related that, so early as September 1879, the ship was fixed in the ice, which did not release it for nearly two years, when it was crushed and sank. For seventeen months a leak had rendered it necessary to keep the pumps going almost without intermission, both day and night. For five months the ship drifted in a circle off Wrangel Land, after which it was swept rapidly to the north-

[1] De Long, now thirty-four years old, had made an Arctic voyage on board the *Juniata*, one of the ships which the American naval secretary, Robeson, despatched in search of the *Polaris*. It went as far as Disko Island and Upernivik, whence De Long and nine other men, in the steam-launch *Little Juniata* pushed forward to Cape York.

west. On May 17, 1881, at seven in the evening, they sighted hitherto undiscovered islands: Jeannette Island, Henrietta Island, and Bennett Island, known as the De Long group.

An impression prevailed on board that the current was not continuous, but a mere drift following the course of the wind. They imagined, however, that it might carry them past Franz Josef Land, and that they might thus emerge into open water in the neighbourhood of Spitzbergen.[1]

All the men had to leave the ship on June 12. They were then about 460 miles from the coast, due south, and about 130 miles further from the delta of the Lena. Having set forth for the Lena and marched southward for a whole week upon the ice, they took an observation which showed that the northward drift of the ice had carried them twenty-seven miles backwards! The intervening islands, however, afforded good resting-points. In September, having reached a stretch of open sea, and started to cross it in three boats, they were separated by a storm. One of the boats was never heard of again. We have already seen what befell the crews of the two others.

The fever of investigation and invention which is one of the leading characteristics of our time may perhaps be reckoned among the many symptoms that we are entering upon a new era.

In the present connection, a saying of that master of worldly wisdom, Francis Bacon, may well be called to mind: 'Nec manus nuda, nec intellectus sibi permissus, multum

[1] Not only was an active search for the *Jeannette* instituted in 1881 in the waters and along the coasts inside Bering Strait, but Greely's expedition, which started in that year, was directed to keep a good look out for it in the Greenland seas.

valet; instrumentis et auxiliis res perficitur, quibus opus est non minus ad intellectum quam ad manum.' 'Neither the bare hand nor the unaided intellect is of much avail; the mind, no less than the hand, stands in need of tools and instruments.'

A complete history of polar exploration—which the above hasty sketch can in no way pretend to be—would necessarily comprise a list, and a long one, of the names of those who have supplied the tools and instruments of which the English philosopher speaks. Many of these names are for ever attached to the districts and localities of the polar world, its mountains, headlands, fiords, glaciers, and rivers, its sounds, channels, and seas, side by side with the names of the discoverers themselves. Among these patrons of polar exploration may be mentioned Booth, Grinnell, Dickson, Gamél, Oskar, Franz Josef, Wilczek, Thomas Smith, Dudley Diggs, Wolstenholme, Jones, Carey, and Lady Franklin. Nations, too, have given their millions and private individuals their mites. The search for Franklin alone is estimated to have cost England from two to three million pounds. A no less honourable place in the record is due to the polar theorists of the present century, with Petermann at their head; and to this category the majority of the explorers themselves also belong. It is true, indeed, that scarcely any department of science has been so fertile of fallacious theories as conjectural polar geography; but it is equally true that there can be no more wasted labour than a haphazard polar expedition, no more futile and even criminal undertaking than the sacrifice of money and lives on an Arctic voyage which does not start from a thorough knowledge of all that has been done and suffered in these regions, and is not guided by a practised talent for combining seem-

ingly unconnected data, constructing reasonable theories, and even divining what lies hidden behind the mists and beyond the immeasurable ice fields.

Many, no doubt, are of opinion that all these enormously costly and perilous expeditions are at best futile and almost criminal. But we do not live by bread alone. Our mind requires to be occupied and exalted, our pulses to be nobly stirred. The 'spectacles' (*circenses*) which the people require are exhibitions of ideal energy and intrepidity in the worthiest of arenas, where the explorer's life is ventured for the sake of an addition, though it be but a fractional one, to the sum of human knowledge.

CHAPTER XV

THE CONTRIBUTIONS OF NORWEGIAN SEAMEN TO ARCTIC GEOGRAPHY

By Professor H. Mohn

The area within which the investigations and discoveries of Norwegian seamen have extended our knowledge of the Arctic regions stretches from the east coast of Greenland to the north coast of Siberia, from the 27th degree west of Greenwich to the 86th degree east—that is to say, 113 degrees in all.

It is chiefly to captains of whaling and sealing vessels, who have been interested in geographical observation, and have made good use of their opportunities, that we owe those extensions of our knowledge of the lands and seas around the North Pole, of which we shall here give a short account.

Discoveries were no doubt made so long ago as last century, when the whalers, for the most part, took the direction of Spitzbergen. Little attention was paid to them, however, until the end of the eighteen-fifties, when the Swedish expeditions to Spitzbergen began. It may now be said, with regard to certain portions of the Polar Sea, that the Norwegian whaling-skippers have opened a new chapter in geographical knowledge.

About the end of the 'fifties, the supply of game on the old hunting-grounds around Spitzbergen had so notably

diminished that sealers were forced to go further afield in quest of seal and walrus, rèindeer and polar bear; and the scientific significance of their voyages dates, naturally enough, from the same period. The attention, too, which men of science began about this time to devote to their discoveries doubtless contributed to induce some of these gallant skippers now and again to venture a little further



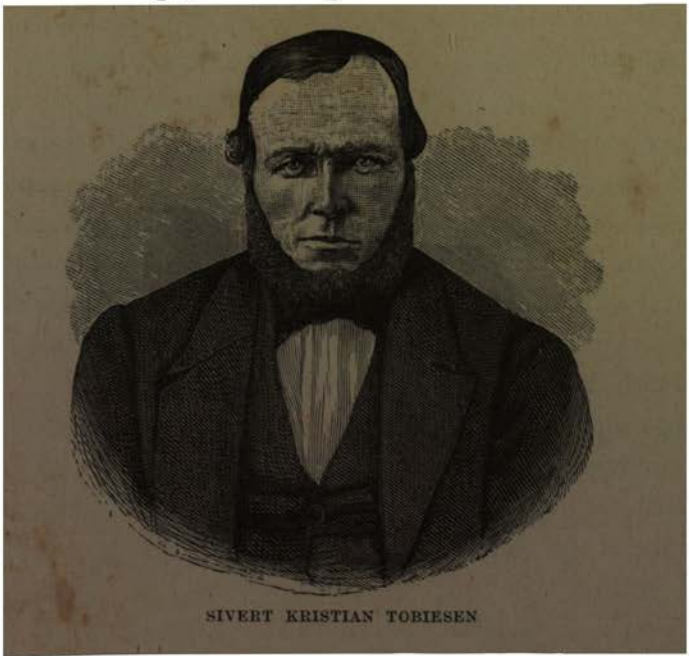
ELLING CARLSEN

into unknown waters than they would have done merely for the sake of hunting.

We may begin our record of Norwegian discoveries in the Polar Sea with the year 1859. In that year Captain Elling Carlsen[1] was seal-hunting in the brig *Jan Mayen* east of Spitzbergen at some distance from the islands which

[1] Born in Tromsö in 1819. He afterwards took part as 'Ice-Master' in the Austrian polar expedition of 1872–74.

form the eastern shore of Storfiord. Carlsen was accompanied by another well-known Arctic sailor, Sivert Tobiesen.[1] On July 21, 1859, Carlsen sighted land to the north, and on the 22nd he was only two miles south of this land, which has afterwards proved to be part of the group of islands known by the name of King Charles Land. It is probable that they had already been sighted in 1617 by an Englishman, Thomas Edge, who had given them the name of Wilkes



SIVERT KRISTIAN TOBIESEN

Land. This discovery had, however, disappeared from the charts and fallen into almost total oblivion, so that Carlsen's observation was in effect a new discovery.

In 1863 Carlsen, again in company with Tobiesen and on board the *Jan Mayen*, did what no one had previously done in historic times, and circumnavigated the whole Spitzbergen group of islands. After sailing along the west coast

[1] Born in Tromsö in 1821, died on Nova Zembla in 1878.

and north coast and through Hinlopen Strait to the south coast of the North-East Island, he was forced by the ice to put about on July 27, sailed back through Hinlopen Strait, and then turned eastward, touched upon the Seven Islands, and beat up on August 5 and 6 to about 81° N. lat. On August 13 he skirted 'along the glacier,' and passed the north-east point of North-east Island, which has since been called Cape Leigh-Smith. On the 14th he passed 'between Great Island and the glacier.' On the 16th he sighted land to the south-east; it was the same he had seen from the south in 1859—King Charles Land. On August 18 he was off the south-east point of North-East Island (afterwards called Cape Mohn), and sailed right across the mouth of Hinlopen Strait to Unicorn Bay. Hence he sailed during the following days along the east coast of Barents Island and Edge Island to the Thousand Islands and Whale's Point at the entrance to the Storfiord, and onward into known waters off West Spitzbergen.

By this voyage Carlsen proved that Spitzbergen can be circumnavigated in years when the ice is favourable, that the eastern part of North-East Island is covered by one continuous glacier extending right to the sea, and that south-east of this land there lies a group of islands, which had been sighted before from the south.

In the following year—1864—Tobiesen, with the brigantine *Æolus*, skirted the east coast of North-East Island. From Cape Mohn he looked across to the western point of King Charles Land, the so-called 'Swedish Foreland.' He had afterwards to desert his ship with its full cargo at Great Island, and take refuge in his boats.

In 1865 we find Tobiesen at Bear Island, where he wintered in a hut on the north coast. Here he made

meteorological observations from August 1865 to June 1866, which throw great light upon the climatology of the Arctic regions and have been minutely registered and discussed. The seal-hunting proved unremunerative, so that the experiment of wintering there was not repeated.

In 1867 Captain Rönnbäk, of Hammerfest, completely circumnavigated West Spitzbergen, and discovered a group of islands on the east coast in the 79th degree of latitude.

In the year 1868 began the Norwegian voyages to the Kara Sea. This sea, lying between Nova Zembla and Siberia, has been called by the Russian naturalist, Von Baer, 'the ice-vault of Europe,' because it is usually so packed with ice, even in summer, that its temperature is lower than that of the surrounding regions. The efforts of the Russians to find a practicable water-way between Europe and West Siberia through the Kara Sea had hitherto proved unavailing.

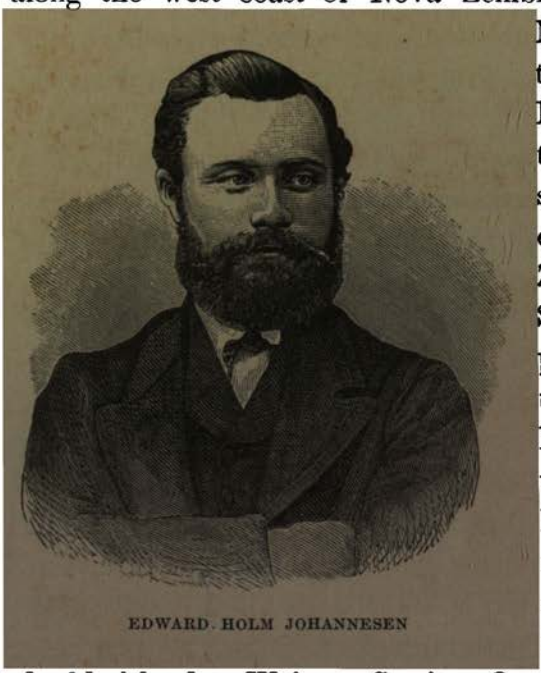
The first sealing captain who ventured into the Kara Sea was the above-mentioned Elling Carlsen. He took an easterly course this year, instead of, as usual, making for Spitzbergen, and entered the Kara Sea through the Waigatz Strait, but soon turned back through the Yugor Strait and proceeded along the whole west coast of Nova Zembla, almost to the northern extremity of the island.

The seals had been unusually plentiful, and he therefore determined to repeat in the following year—1869—the experiment of entering the Kara Sea. He made his entrance through Waigatz Strait and proceeded along the east coast of the Kara Sea to White Island. Here he found the coast of Siberia quite flat and the sea very shallow. In the same year an English sportsman—Mr. John Palliser—also entered the Kara Sea, through Matotchkin Strait, and made his way

across the sea almost to White Island. He killed an immense number of walruses and polar bears.

But the most notable exploration in this quarter was made by a young Norwegian sealing skipper, Edward Holm Johannesen, born in 1844 in Balsfjord parish, and himself the son of a well-known seal-hunter.

On board the schooner *Nordland*, Johannesen sailed first along the west coast of Nova Zembla right up to Cape Nassau (76½° N. lat.), thence back to Matotchkin Strait, through it, and southwards along the east coast of Nova Zembla to Waigatz Strait. Thence he proceeded eastward to the Samoyede Peninsula, and northward past White Island, then westward again to Nova Zembla, and southward along the east coast of that double island to Waigatz Strait. On this voyage he took a series of soundings. Since the discoverer of the Kara Sea, the Dutchman Willem Barents, wintered in 1596–97 on the east coast of North Nova Zembla, no one had been so near this coast as Edward Johannesen in 1869.



EDWARD HOLM JOHANNESEN

Nordenskiöld justly characterises these first voyages through the Kara Sea as 'among the most remarkable exploits in the history of Arctic seamanship,' and treats them

as opening a new era in the history of the North-East Passage.

Johannesen, who was then only twenty-five, received a silver medal from the Swedish Academy of Science, to which he had sent in a report of his discoveries. In forwarding him the medal on behalf of the Academy, Nordenskiöld remarked, by way of a joke, that a complete circumnavigation of Nova Zembla would doubtless have earned him a gold medal. It was not long before the suggestion made in joke was carried out in earnest—no longer, indeed, than the following year.

In 1870 Johannesen sailed round the whole of Nova Zembla. Through Waigatz Strait (July 12) he entered the Kara Sea, and crossed it to Yalmal; then put back to Nova Zembla, and crossed to Yalmal a second time. He had now his full cargo of seals, but determined, nevertheless, and despite the fact that the summer was over, to attempt the circumnavigation of the double island. In this he was successful, though he passed the north-east point so late as September 3. He sent in his report to the Swedish Academy of Science, and duly received his gold medal. This same summer some other sealing captains (T. Torkildsen, E. A. Ulve, T. B. Mack, P. Quale, and A. O. Nedrevaag) contributed several details to our geographical knowledge of Nova Zembla and the Kara Sea. The results of the Norwegian observations were published in *Petermanns geografische Mittheilungen* for 1869 and the following years.

Our acquaintance with Nova Zembla and Spitzbergen was notably extended in 1871. Mr. Benjamin Leigh-Smith, afterwards celebrated for his expedition to Franz-Josef Land in 1881–82, chartered at Tromsö the schooner *Samson*, Captain Erik A. Ulve, for a sealing voyage. In August they

were at the south end of Hinlopen Strait. From Thumb Point on William Island they saw that North-East Island stretched much further eastward than the charts represented, and fixed the south-east point of this island, which Petermann has called Cape Mohn, four degrees eastward from the south point indicated on the chart. In the beginning of September, Smith and Ulve sailed along the north coast of North-East Island, and found that here, too, it extended four degrees further east than was shown on the earlier charts. Several islands were here discovered, which Petermann has named after Norwegian Arctic voyagers and men of science.

The map of north Nova Zembla was considerably corrected in accordance with the results of the Norwegian sealers' observations in 1871, and these corrections have not since been found to require any essential modification. The most important contributions on this point came from E. Carlsen, the brothers E. H. and H. C. Johannesen,[1] S. Tobiesen, F. Mack, Dörma, and Isaksen.

It was in 1871 that Elling Carlsen discovered Barents's winter quarters on the east coast of north Nova Zembla, and brought back relics left by the Dutch explorer and his crew in 1596–97.

It was Mack who this year penetrated furthest east in the Kara Sea. On the 3rd of August he doubled the northern point of Nova Zembla, and by the 12th of September he had reached 82½ E. long. and 75° 25′ N. lat. On the 26th of September he passed Yugor Strait, and Nova Zembla was thus for the second time circumnavigated, an exploit which only two years previously had been regarded as impossible.

[1] H. C. Johannesen is also known as the captain of the steamship *Lena*, which in 1878 accompanied Baron Nordenskiöld as far as the mouth of the Lena, on his circumnavigation of Asia.

The season of 1872 also brings important contributions to Arctic geography from Norwegian seamen.

The land east of Spitzbergen, which had been seen by Carlsen in 1859 and 1863, by Tobiesen in 1864, by a Swedish expedition in 1864, by Heuglien in 1870, and by Ulve in 1871, was reached in 1872, and in part ascended and explored by Altmann, Nilsen, and Johnsen, all three Norwegian captains. The land, which has been called King Charles Land, proved to consist of several islands. The western part was called the Swedish Foreland, the northern height Haarfager Hill, and the southern height Cape Tordenskiold.

In 1889 King Charles Land was again visited by an expedition despatched by the Bremen Geographical Society, under Dr. Kükenthal and Dr. Walther, on board a Norwegian sealing vessel, commanded by a Norwegian captain, Hemming Andreassen. Their observations in the main confirmed those of their predecessors. The land consists, as Altmann supposed, of several islands, separated by straits or sounds.[1]

In 1872 the Kara Sea was closed by the ice, so that the sealers could not enter it. Some of them, therefore, kept to the west coast of Nova Zembla; and among these was the well-known veteran Sivert Kristian Tobiesen. He had several times before, in the course of his gallant career, learnt what it meant to winter in the polar regions. In 1864, for instance, after having circumnavigated the North-East Island of Spitzbergen, he had been ice-bound, along with two other vessels, off Hinlopen Strait. They had to abandon their ships and cargoes, and make their way in boats to Ice Fiord, where they were all picked up by the Swedish Spitzbergen Expedition of 1864. In 1865-66, again, as beforementioned, Tobiesen wintered on Bear Island. When there-

[1] See Karl Petterssen's map in *Ymer*, 1889.

fore, he found himself in September 1872 ice-bound on the west coast of Nova Zembla, near the Cross Islands, and was forced to face the winter there, he well knew what he had to look forward to. Seven of his crew took to the boats, and started southward in search of some sealing ship which should take them on board. They did not find any; but six of them, after terrible toils and sufferings, fell in with some Samoyede families who had pitched their tents on the coast of Goose Land. Here they passed the winter, and managed next year to make their way southward, till they fell in with some sealers who brought them back to Norway. Two of them, however, remained several years among the Samoyedes.

In the meantime Tobiesen himself and his son, with two men, had remained with the ship. They were very insufficiently equipped for an Arctic winter, both in regard to provisions and other necessaries of life. During the first part of the winter they got on well enough, for they shot a number of polar bears; but when, in the spring, they had nothing but the salted and half-decayed bears' flesh to eat, and the temperature went right down to $-39\frac{1}{2}^{\circ}$ C.($-39{\cdot}1^{\circ}$ Fahr.), they all got scurvy. Tobiesen died on April 29; his son sickened in May, and lingered on to July 5. The two survivors of the crew made their way southward in August in an open boat, and were rescued by a Russian sealer.

The memorable point about this tragic adventure is that Tobiesen and his son, so long as their strength lasted, kept a diary of observations, made with instruments tested at the Meteorological Institute, and thereby furnished a most important contribution to the meteorology of these regions. The observations extend from October 1873 to May 1874. It is a splendid proof, not only of a strong sense of duty, but

of the true scientific spirit, that, in their desperate condition, these men should have made observations and kept their diary up to the very threshold of the grave.

The same winter which imprisoned Tobiesen on Nova Zembla, Nordenskiöld passed in Mossel Bay in Spitzbergen, and seventeen Norwegian seal-hunters at Cape Thordsen, in Ice Fiord, on the same island. All seventeen, Norwegians and Quæns, fell victims to the scurvy. Their sad experience, however, was not without its fruit. They, too, left behind them a meteorological diary, containing observations from the middle of October to the end of March. The thermometer they used had been given them by Nordenskiöld. These observations have been tabulated, and constitute a welcome contribution to the climatology of Spitzbergen.

In 1875, Nordenskiöld chartered at Tromsö the sealer *Pröve*, Captain N. I. Isaksen, and, with a crew of twelve experienced seal-hunters, all Norwegians, made his celebrated voyage to the Yenisei. The *Pröve* is not the only one of these sealers that has done duty on scientific expeditions; indeed, it may almost be said to have become the rule, in such enterprises, to charter one of these vessels. In these instances, of course, the captains can claim no share in the honour due to the scientific observations; but the indirect assistance they have rendered ought not to be undervalued.

In 1876, Captain Christian Bierkan, of Vadsö, sailed on a sealing expedition to Nova Zembla, and there, on October 1, went into winter quarters in Möller Bay, near Little Karmakula. Through the whole winter and spring, up to June 10, 1877, he carried on meteorological observations with instruments which had been supplied him, at his own request, by the Norwegian Meteorological Institute. These observations

have been tabulated by Aksel S. Steen, and printed in the annual report of the Institute for 1876.

In 1877 a Norwegian Arctic Expedition visited Jan Mayen. The chief result of this visit was a new map and description of the island. It appeared that on the earlier charts, especially Scoresby's, it was placed in the right latitude; but its longitude had to be shifted no less than nine miles to the westward. This correction was at once embodied in the official charts of the different nations. The Austro-Hungarian Polar expedition passed a year upon Jan Mayen (1882–83), and were able to make a very complete map of the island, which confirmed in all essentials the corrections of the coast-line made by the Norwegian expedition.

The year 1878 brings us to an actual new discovery made by a Norwegian—the above-mentioned Captain Edward Johannesen, who sighted a hitherto unknown island between Siberia and Franz-Josef Land. After sailing along the west, north, and east coasts of Nova Zembla, as far as Barents's winter quarters, Johannesen struck eastwards on August 10, 1878, and on the 16th was off the coast of Siberia a little westward of Cape Taimyr. Nordenskiöld had passed this spot in the *Vega* three days before. Hence Johannesen laid his course to the west, north-west, and north, and on August 28 sighted an island, which he circumnavigated on the following day, before turning eastward again. Johannesen gave his new discovery the name of Ensomhed (Lonely Island). It was about four geographical square miles in extent, and only about a hundred feet above the level of the sea.

In 1878 an Arctic Expedition visited Spitzbergen, and succeeded in making a map of Advent Bay in Ice

Fiord, and correcting the geographical longitude of these regions.

The season of 1881 was remarkably free from ice to the west and north-west of Nova Zembla. The most notable incident of this year was the northward voyage made by the sealer *Pröve*, Captain Isaksen, on board which, as before mentioned, Nordenskiöld had made his first expedition to the Yenisei. On August 19 Isaksen had reached 77° 35′ N. lat., in water entirely free from ice, nor were any signs of ice to be seen to the north or north-west. Isaksen felt convinced that if his vessel had been of more modern build (it was forty years old) he would have had no difficulty in sailing right to Franz-Josef Land, or even to some hitherto undiscovered region nearer the Pole.

In 1889 Captain R. Knudsen made a sealing voyage to East Greenland in the *Hecla*. On this voyage he was enabled to correct the charts of the Greenland coast between the 73rd and 76th degrees of latitude. Again, in 1893 Captain Knudsen succeeded in making several corrections in the chart of the Blosseville Coast in East Greenland.

In 1894, Martin Ekrol, with his schooner the *Willem Barents*, wintered at the eastern point of Storfiord in Spitzbergen, and brought back with him several rectifications of the chart. He also kept a meteorological diary which throws a very interesting light upon the climate of south-east Spitzbergen, where no winter observations had previously been made.

Most of these observations made by Norwegian sailors in the Polar Seas have been tabulated by the Meteorological Institute before being published. Notices of all the expeditions and their results will be found in *Petermanns Mittheilungen*.

In the above short survey of our seal-hunters' contributions to the geography and meteorology of the polar regions, we have spoken only of the absolutely or practically new additions which they have made to our knowledge. It is of course impossible in such a survey to give any adequate account of the dangers and toils and deeds of heroism that underlie these dry data. Let it not be forgotten that this life in the Polar Sea, off the coasts of Greenland, Spitzbergen, and Nova Zembla, fighting drift ice, and fog, and frost, and storm, is the calling by which these men earn their bread. It is in the thick of the struggle for existence that many of them have patiently and unostentatiously carried out important scientific work, all the more admirable in that it was entirely disinterested. It brought them no solid reward, and the honour—well, that was scarcely a realisable asset. Of the thirty or forty ships which year after year have set forth to hunt the seal and walrus in their fastnesses, how many have never returned! How many Arctic winterings have passed unrecorded, how many fine exploits have been performed that have never come to the ear of the historian! These men, who, in their search for better hunting-grounds, have led the way round the north of Spitzbergen and into the Kara Sea, are pioneers born and bred, and their contributions to polar investigation entitle them to an honourable place in its history.

When they one day find their historian, who shall not only set forth their services to science, but also give a true picture of their characters and their lives, their own countrymen will no longer stand alone in assigning them the place of honour they so well deserve. Many a renowned name might show in truer proportions if the saga of these unknown sailors were to be written.

CHAPTER XVI

WITH THE CURRENT

In the beginning of 1890, Nansen delivered a lecture before the Norwegian Geographical Society, and set forth his plan for a new Polar Expedition. 'I believe,' he said, after giving a short sketch of the history of polar investigation, 'that if we study the forces of nature itself which are here ready to hand, and try to work with them instead of against them, we shall find the surest and easiest way of reaching the Pole. It is useless to work against the current, as previous expeditions have done; we must see if there is not a current that will work with us. There are strong reasons for supposing that such a current exists.'

Nansen's plan was founded upon the assumption that from Bering Strait and the north coast of Eastern Siberia a constant and comparatively strong sea-current sets in the direction of the North Pole, whence, again, it turns to the south or south-west, between Spitzbergen and Greenland, follows the east coast of Greenland, and then sweeps around Cape Farewell into Davis Strait.

Three years after the sinking of the *Jeannette*, north of the New Siberia Islands in June 1881, a number of articles were found on the drift ice off the south-west coast of Greenland, which must undoubtedly have belonged to the lost ship —among them, for example, a provision list with the signature of the captain, De Long, a list of the *Jeannette's* boats,

and a pair of oil-skin trousers marked with the name of one of the sailors who were rescued. The news of this discovery upon the drifting ice floe attracted much attention, and it was conjectured, with a plausibility approaching to certainty, that the floe must have been carried by the above-mentioned current from the New Siberia Islands, across or near the Pole, to the place where it was found. It was calculated that the articles must have been conveyed at a speed of about two miles in the twenty-four hours, which corresponded with the rate at which the *Jeannette* was borne along in the ice during the last four months of her existence.

These relics of the *Jeannette* are not, however, the only objects which have made the long journey with the current from East Siberia across the Pole, and have been swept southward along the east coast of Greenland. A so-called 'throwing stick,' used by the Eskimos for hurling their bird-darts, was found by a Greenlander, and given to Dr. Rink at Godthaab, who afterwards presented it to the Christiania University. It has been shown that this instrument is quite different in form from that used by the Greenlanders, but exactly resembles the throwing-sticks used by the Eskimos of Alaska, the north-western extremity of North America, which borders on Bering Strait; so that it too, in all probability, had traversed the Polar Sea.

The drift wood which is washed ashore in Greenland in such large quantities, and is so indispensable to the Eskimos in the absence of timber trees, has been shown to consist for the most part of timber native to Siberia, so that it too must have been carried by the same current across the very precincts of the Pole.

In the course of his wanderings along the shores of Den-

mark Strait, Nansen found on the drift ice large quantities of mud. Of this he collected a number of specimens, which were examined by Professor P. Cleve, of Upsala, and A. E. Tornebohm of Stockholm, and proved to consist of varieties of soil characteristic of Siberia. Thus the probability is that this mud, too, had made the long polar voyage.[1]

These facts of themselves sufficiently prove that there must be a practicable connection between the sea to the north of Asia and the sea on the east of Greenland—not, perhaps, an open water-way, which one could scarcely expect to find, but a practicable route in the sense that the current carries the ice floes (now frozen together, now piled one on the top of the other, and then again broken up and scattered), across the distance indicated, with considerable regularity and in an ascertainable space of time. From these premises, then, Nansen drew what we may fairly call the inevitable conclusion that if an ice floe with what happens to be upon it can thus make its way across the polar area in a given time, it must be no less possible for a ship, fixed among the ice floes in the course of the current, to complete the same passage in the same time.

His plan was to make his way, with a small but strongly built vessel, to the New Siberia Islands, and there or thereabouts await the most opportune moment for making the furthest possible advance in ice-free water. He thought it probable that he could get well past the Islands. 'When once we have come so far, we shall be right in the current in which the *Jeannette* was caught. Then the thing will be to press on northwards with all our might until we stick fast.

[1] See Nansen's lecture *On the Coming Norwegian Polar Expedition and its Equipment*, delivered before the Norwegian Geographical Society, September 28, 1892.

We must now choose a favourable place, moor the ship firmly between convenient ice floes, and then let the ice screw itself together around her as much as it pleases—the more the better. The ship will simply be lifted out of the water into a firm and secure ice berth.' Henceforth—so the project con-



NANSEN ON THE ICE (SUMMER DRESS)

From an Instantaneous Photograph

tinues—the current takes up the work of propulsion; the ship is no longer a means of transport but a barrack. The current sweeps it past the Pole and onwards into the sea between Greenland and Spitzbergen. At the 80th degree of latitude, or possibly before that if it be summer, it will probably find open water and be able to sail home. But if it

should be crushed by the pressure of the ice? Then the equipment and provisions will be moved to a strong ice floe, where the tents will be pitched, warm tents of double sail-cloth with an intermediate layer of reindeer-hair. One can get far upon an ice floe. The crew of the *Hansa* drifted from Smith



NANSEN ON THE ICE (WINTER DRESS)

From an Instantaneous Photograph

Sound right down to Davis Strait. But if the ice floe should break? Even that will not be fatal, for the stores will be distributed over the ice and placed upon wooden rafts. Then, having in this way arrived in the Greenland sea and found open water, the expedition will take to its boats. It is not the first time Norwegian seamen have traversed the Arctic

Sea in open boats; if your boats are good, it is not at all impossible to get on amid the ice.

And it is no unreasonable calculation that all this may take no more than two years. Five years' provisions, at any rate, will be amply sufficient. With the food-stuffs now available, there is no fear of scurvy. Besides, a certain amount of fresh meat may probably be counted on; seals and polar bears are to be found very far north, and the sea no doubt contains plenty of small animals which may be eaten at a pinch. But suppose, now, that the *Jeannette* current does not pass right across the Pole, but, say, between the Pole and Franz-Josef Land? That matters very little. 'We do not set forth to seek for the mathematical point which forms the northern end of the earth's axis; to reach this particular spot is not, in itself, a matter of the first moment. What we want to do is to investigate the great unknown regions of the earth which surround the Pole; and our investigations will have practically the same scientific value whether we reach the actual Pole itself, or pass at some distance from it—curious though it would be, no doubt, to stand on the very Pole and be turned round with the earth on one's own axis, or see the oscillations of the pendulum describe an angle of exactly fifteen degrees in the hour.'

Nansen finally dwells[1] upon the scientific significance of polar exploration—its important bearing upon the problems of geography, terrestrial magnetism, atmospheric electricity, the Aurora Borealis, the solar spectrum, dawn and twilight, the physical geography of the sea, meteorology, zoology and botany, palæontology and geology. 'We Norwegians,' so he ends his lecture, 'have before now contributed not a little to the exploration of the Arctic area; our gallant Tromsö

[1] In his lecture of 1890.

and Hammerfest men in particular have done excellent service in this respect. But as yet no Norwegian crew has set forth straight for the Pole in a Norwegian craft.

'The polar area must and shall be investigated throughout its whole extent. There has hitherto been a noble rivalry between the nations as to which should first achieve the goal; and one day it will be achieved.

'May it be Norway's fortune to lead the way! May it be the Norwegian flag that first floats over the Pole!'

In November 1892 Nansen expounded the same plan before another geographical society, not a young body like ours, but old and world-renowned above all others—the Royal Geographical Society in London.

There was a brilliant gathering, including almost all the Englishmen who have distinguished themselves in Arctic exploration, and they are not a few. Before this society, the first to which Nansen, on his return from Greenland (1889), had set forth the results of his expedition—before this society, which had done more than any other for the advancement of Arctic research—before, in short, the most competent body of Arctic specialists in the world—he had now both to explain and to defend the basis and the details of his plan.

There they sat before his eyes, all those celebrated explorers whose names were already inscribed in the history of Arctic research—those grizzled and white-haired pioneers of the polar world, the heroes of so many an achievement before Nansen was born. There sat Admiral Sir George Nares himself, the celebrated chief of the *Alert* and *Discovery* expedition, during which Commodore Markham had, on May 12, 1876, reached the latitude of 83° 20′, a record which only Lockwood had beaten. There sat

Admiral Sir Leopold McClintock, the leader of the *Fox* expedition (1857–58), by which Franklin's fate had been finally ascertained. There, too, was Admiral Sir E. Inglefield, who in 1852 brought Kane Basin within the sphere of geographical knowledge. And there, among the rest, was the famous Arctic traveller, Sir Allen Young, who, so long ago as 1857, had accompanied McClintock, and in 1875 had taken the *Pandora* right up into Smith Sound to bring tidings of the Nares expedition—the same *Pandora* which, under the name of the *Jeannette*, carried the hapless De Long to his fate.

A whole host of other famous polar travellers were present—Admiral Ommanney, Dr. Rae, Captain Wiggins, the well-known Yenisei trader, Captain Wharton, &c.

It was to this illustrious gathering that Nansen was to expound his scheme. His lecture was, as usual, clear, sober, attractive in its form, and plausible in its matter. But he here stood face to face with a concentrated mass of experience, all tending to prove the insuperable difficulties of polar travel, which could not instantly make way for a new idea. Practically all of these famous pioneers of Arctic research, one after another, commented unfavourably upon the scheme.

Old Admiral Sir Leopold McClintock opened the discussion as soon as the lecture was over. He began his speech thus: 'I think I may say this is the most adventurous programme ever brought under the notice of the Royal Geographical Society. We have here a true Viking, a descendant of those hardy Norsemen who used to pay this country such frequent and such unwelcome visits.' But he could not venture to express any great confidence in the scheme put forward, even supposing Dr. Nansen succeeded

in getting into the alleged polar current. Sir Leopold feared the force of the ice-pressure, and did not believe that it would force the ship up upon the ice.

The next speaker, too, Admiral Nares, expressed strong doubts as to the plan. He particularly doubted whether the *Fram* would succeed in finding any polar current, and dwelt upon the dangers of a drift voyage such as Nansen projected.

Admiral Inglefield expressed himself more favourably, but Sir Allen Young again emphasised the dangers and difficulties, thought that land and shallow water would be found in the neighbourhood of the Pole, and very much doubted whether the ship would be forced up upon the ice. His opinion was that it would be wisest to strike for the north from a point well to the westward of the New Siberia Islands.

Captain Wiggins, too, was opposed to making the New Siberia Islands the starting-point, 'as they are the most treacherous, low, sandy, muddy, horrible places.' But, on the whole, he approved of Nansen's plan, and ended by wishing him a hearty God-speed.

Captain Wharton, a well-known authority on these questions, gave him warm encouragement as to his theory of the current. He thus ended his speech: 'People sometimes ask: What is the use of Arctic exploration? Amongst other things I think it may be said that its use is to foster enterprise and bring gallant men to the front. To-night we have an excellent example of that in Dr. Nansen. I can only say to him, God-speed!'

Manuscript communications from Admiral Sir George Richards and the celebrated Sir Joseph D. Hooker were also read, both sceptical and full of warnings. Sir Joseph

Hooker thus ended his remarks: 'I may conclude with expressing the hope that Dr. Nansen may dispose of his admirable courage, skill, and resources in the prosecution of some less perilous attempts than to solve the mystery of the Arctic area.'

It was not until late in the evening that Nansen himself was at last called upon for a short reply to all these doubts and anxious warnings. His answer is as like him as it could be. Though plainly willing enough to take advice as to details, he is in the main unshaken in his conviction of the practicability of his scheme. And while he answers, point by point, the objections to it, he gathers new arguments from these objections themselves. Referring to Admiral Nares's remark, that an Arctic expedition ought always to have a secure line of retreat, he answers: 'I am of the opposite opinion. My Greenland expedition proved the possibility of carrying out such an enterprise without any line of retreat, for in that case we burnt our ships, and nevertheless made our way across Greenland. I trust we shall have the like good fortune this time, even if we break the bridges behind us.'

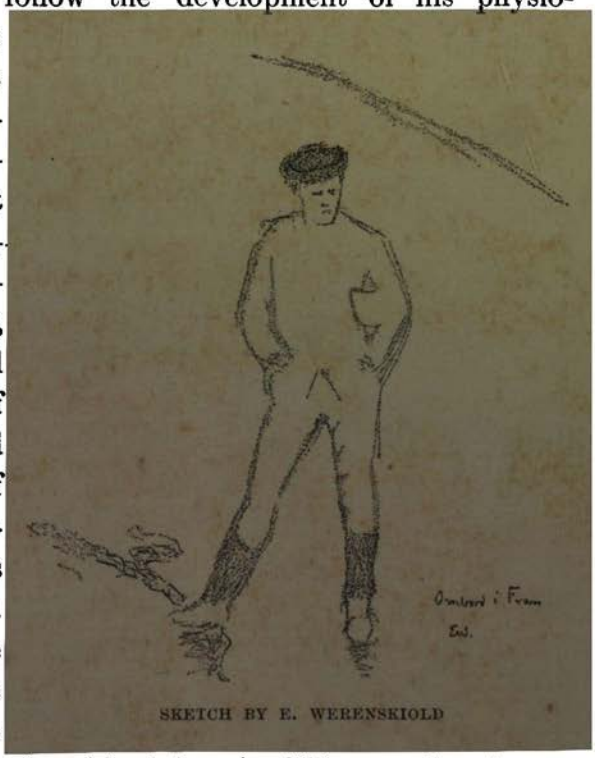
It is, as Sir Leopold McClintock said, the old Viking blood that speaks in these words.

For it is true, as that famous explorer hinted at the beginning of his speech, that there is a touch of romance in Nansen's scheme. It is constructed, indeed, upon a scientific basis; but no one who was exclusively a man of science, or exclusively a sportsman, would have had the foresight to conceive such a plan, or the courage to execute it. A creative and daring imagination is its determining element.

CHAPTER XVII

AT HOME AND ABROAD

We have presented in this book a series of portraits of Fridtiof Nansen at different ages, so that our readers have been enabled to follow the development of his physiognomy from the thoughtful but rounded and unwrinkled boyishness of his student days, up to the intentness of Werenskiold's drawing, the almost painful concentration of Lessing's bust, and the melancholy of the London portrait which forms the frontispiece. We here see the cheeks sunken, the eyes dilated, the brow corrugated, the skin lying in folds on the sinewy throat. One can scarcely believe that this is the face of a man of very little more than thirty. It almost seems as though a whole lifetime were recorded in these traits, a



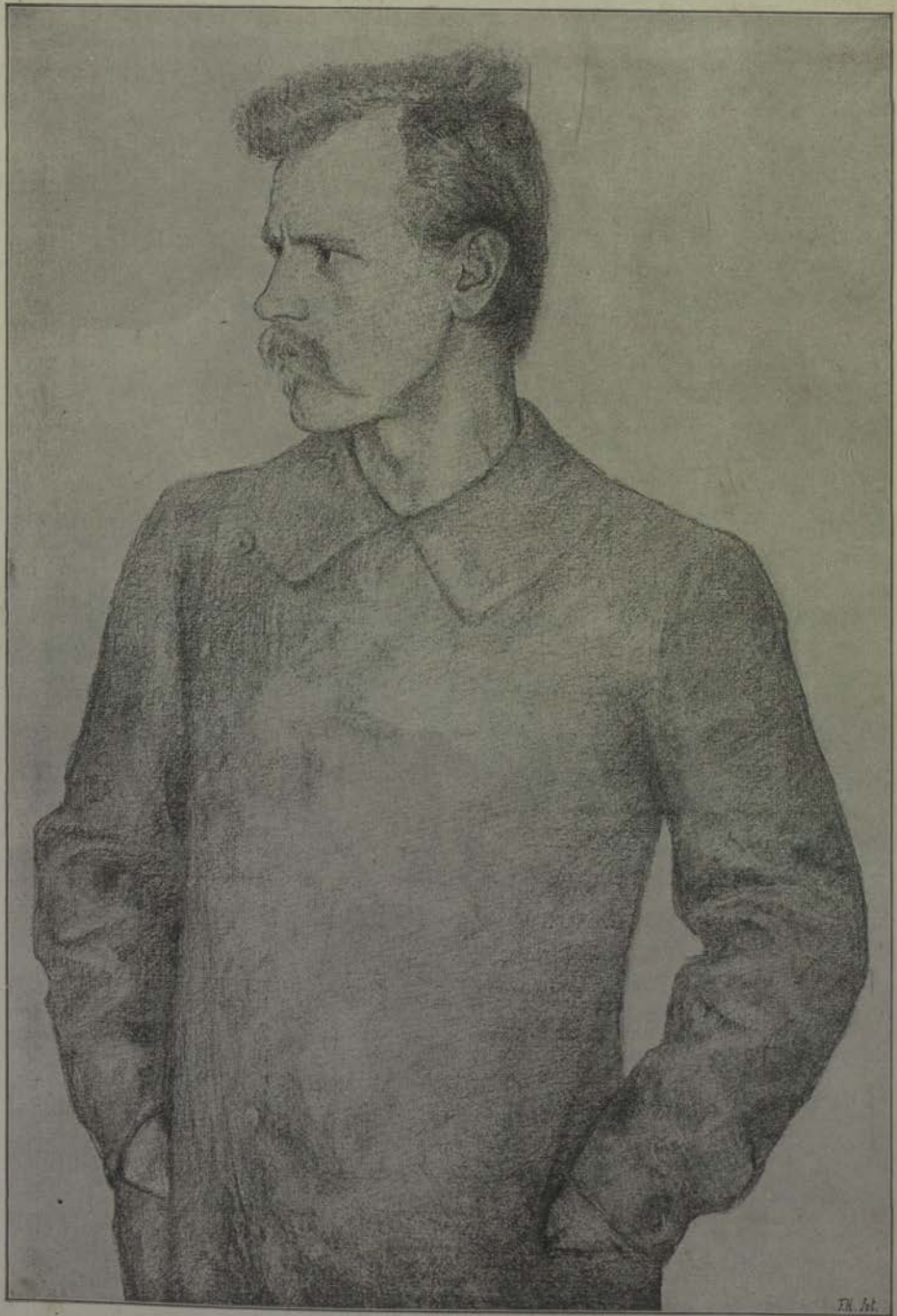
SKETCH BY E. WERENSKIOLD

lifetime with all its sufferings; yet it is in reality the face of a young man who has been spared all great sorrows. It is the unrest of the discoverer, it is the habit of brooding over great plans, and forecasting the means of their realisation down to the smallest details, that has furrowed this countenance, to say nothing of an insatiate thirst for work from boyhood upwards. This is the portrait of a man who has never known the beautiful indecision of youth, its dreamy repose, its vague delight in mere existence. He has been struggling with problems from the first. He has from the first transmuted the freshness of youth into energy, into conquering fortitude. It is with full appreciation of their meaning that he quotes (as we have seen), in an early letter to his father, these words of Biörnson's :—

Ungdomsmod,
ungdomsmod
gaar som rovfugl i det blaa,
det maa jage, det maa slaa,
det maa alle varder naa.[1]

These last words may serve as the motto of his whole youth. He has already reached several beacons, and he is now girding up his loins to make for the highest of all, which had been the goal of his dreams for many a year, when that picture was taken in London. The expedition across Greenland (so one of his most intimate friends writes to us) was only a preparation for the Pole. Long before his name was known, or his character divined, either at home or abroad, he had set himself this gigantic task. The moment for attacking it is now at hand. Traces of the vast expenditure of energy it has cost to achieve what lies behind

[1] See p. 82.



FRIDTIOF NANSEN

(From a drawing by E. Werenskiold)

him mingle in this picture with a deep yearning towards the unfulfilled—that wistful melancholy which we recognise in the mother, in the creative artist, in the ardent investigator.

Immediately after his return from Greenland, Nansen was offered the post of Curator of the Zootomic Museum of Christiania University, and accepted the offer. Besides the duties of this position, an immense quantity of work fills up the interval between the Greenland and the North Pole expeditions; he writes the story of what he has done, and he makes the preparations for what he has yet to do. And to all this we must add his lecturing tours to different parts of Europe.

A honeymoon was out of the question. The day after the marriage, the happy couple started by way of Gothenburg, Copenhagen, Flushing, and London, for Newcastle, the scene of a geographical congress which lasted a week, while the new-made wife wondered in her secret soul that her husband should thus prefer 'geography' to 'love.'[1] Thence back to London. In the great city, they let the world, with its discovered and undiscovered countries, look after itself, and gave themselves up, in the solitude of that densely peopled wilderness, to the rapture of existence. Then they passed six glorious days in Paris. In October they were home again; but the sixteenth of the month found them once more on the move, this time for Stockholm, to attend a meeting of the Swedish Anthropological and Geographical Society. This society had, in January 1889, determined to confer its *Vega* medal upon Fridtiof Nansen, and it was now

[1] An allusion to a comedy of Biörnson, *Geografi og Kiærlighed.*

handed to him by the King. Only five people had received it—Nordenskiöld, Palander, Stanley, Przewalski, and Junker. The spokesman of the society, Professor Gustaf Retzius, said in the course of his speech: 'Dr. Nansen has had fortune on his side in his first enterprise. Let us hope that this victory may not prove his Narva, leading him to underrate difficulties, and thus luring him on to a Pultowa. May it be only the first of a series of triumphs!' The speaker knew, he said, that Dr. Nansen was in no way puffed up by his achievement, but precisely the same as he had been two years ago when he came to Stockholm to consult Professor Nordenskiöld as to his projected journey. But Nansen might well be proud of his exploit, the speaker continued, because it was an honour, not only to himself, but also to his country. It is not on the field of battle that small nations can vindicate their place in the world, and secure their independence. It is in the domain of culture, of civilisation, of science and art—a domain which lies open to all—that they must press forward into the front rank and strive for the palm of victory. Here it is that they must seek for their true distinction, and earn the respect of the great nations.

So far as we can ascertain, the *Vega* medal was the first distinction of its kind conferred upon Nansen. Seven years ago, as an unknown seal-hunter in the Polar Sea, he had looked with reverence upon the gallant craft which had borne Nordenskiöld round Asia. Now he himself held a place of honour by the side of that renowned traveller, and received the medal which bore the name of his ship and was, according to custom, presented on the day when the *Vega* reached Stockholm after her North-East passage.[1]

[1] Nansen on this occasion delivered a lecture before the Society on his

The *Vega* medal was far from being the only mark of distinction conferred upon him. In the course of these years Nansen became a member of a host of geographical and other learned societies, and received several gold medals and other decorations. We may mention the Karl Ritter medal, and the Victoria medal of the Royal Geographical Society, conferred upon him in the beginning of 1891. This celebrated body states as follows its reasons for selecting him for this distinction:—'The patrons of the Victoria medal, to Dr. Fridtiof Nansen, for having been the first to cross the inland ice of Greenland, a perilous and daring achievement, entailing a journey of more than three months, thirty-seven days of which were passed at great elevations, and in the climate of an Arctic winter; obliging him to lead a forlorn hope with the knowledge that there could be no retreat, and that failure must involve the destruction of himself and his companions; and calling forth the highest qualities of an explorer. For having taken a series of astronomical and meteorological observations under circumstances of extreme difficulty and privation, during a march which required exceptional powers of strength and endurance, and mental faculties of a high order, as well as the qualities of a scientific geographer, for its successful accomplishment. And for his discovery of the physical character of the interior of Greenland, as well as for other valuable scientific results of his expedition.'[2]

A distinguished friend in Copenhagen, writing to congratulate Nansen on receiving the Victoria Medal, ends his letter thus: 'If you should hereafter become Commander or Grand Cross of any order whatsoever, you must excuse

Greenland journey. See *Ymer*, a periodical published by the Swedish Anthropological and Geographical Society, IX. 6.

[2] *Proceedings of the Royal Geographical Society*, 1891, p. 294.

me if I do not congratulate you. Crowds of people have the right to wear a ribbon; but the Victoria Medal is held by very few, and it's a devilish select company it brings you into.'

The Grand Cross is presumably in reserve for his return from the Polar Seas. Hitherto Nansen has received the Knights' Cross of the St. Olaf Order (May 25, 1889) and of the Order of the Dannebrog. It can scarcely be indiscreet to add, that it pained him greatly to be the sole recipient of these distinctions. He felt strongly that his comrades who had risked their lives with him, and shared with him his toils and dangers, ought also to share with him the public recognition of their exploit. It was certainly no fault of his that he was the only member of the expedition who received the cross of St. Olaf.

Even before he returned from Greenland he had been elected a member of the Christiania Scientific Society. A whole host of evidences of the appreciation of his achievement in scientific circles streamed in upon him after his return, in the form of letters from the leading authorities on Arctic exploration. We shall here quote only a single expression from a letter addressed to him by the celebrated Arctic traveller, Sir Clements Markham, dated March 11, 1891. He says of the Greenland expedition: 'For my part I regard it as being, from the geographical point of view, one of the most remarkable achievements of our time, remarkable alike for intrepidity and for the importance of its scientific results.'

On June 24, 1891, Nansen was appointed Corresponding Member of the Institute of France, in succession to Nordenskiöld, who was promoted to the rank of Foreign Associate.

When he and his wife returned from Stockholm they lodged for two months with Martha Larsen, formerly housekeeper at Great Fröen, whom we have already had occasion to mention more than once. Her house, which revived all the memories of his childhood, was like a haven of rest where he could take refuge at any time. He had lived with her during the 'hard spring,' when he had to struggle both with his doctorial thesis and with his preparations for the Greenland Expedition. Here he would seek rest and refreshment of an evening in chatting over the old days at Fröen.

'Do you remember, Martha,' he would say all of a sudden, 'that time when I came to you streaming with blood from a cut in the leg?'

'Indeed I do—you had fallen on some broken glass.'

'No—I can tell you the truth now, Martha. You see we had got new sheath-knives, both Alexander and I; and as I was slashing the heads off thistles with my new knife, I ran it into my leg. But of course I couldn't tell you that.'

'It wasn't like you to tell me a lie,' says Martha, with mild reproach.

'No, but there's a limit to everything, Martha; and I couldn't have the new sheath-knife taken from me.'

It has been the lot of Martha Larsen to sweeten the year-long toils of the polar explorers. Not that she, personally, took part in the expedition; but she was the self-appointed purveyor of jams and jellies to the *Fram*. In the course of his voyage northwards, when Nansen was sending his farewell greetings in letters to all who stood very near to him, or had played an important part in his life, he did not forget his faithful old friend. From Khabarova, Yugor

Strait, he writes to her on August 3, 1893: 'As I am on the point of leaving this last place from which letters can be despatched, I must send you a parting greeting, and thank you for all your friendship and goodness to me.' Her friendship he describes as untiring, and says that she is always finding opportunities to be of service to him and to his wife. We need not apologise for referring to this simple little letter. It is not every celebrated man whose memory is so alert at the critical moments of his life.

From Martha Larsen's the newly-married couple removed to the Drammen Road, where they set up house. But there was too little sun here, and too much town, too much civilisation. They determined to build for themselves, and bought a site at Svartebugta (the Black Bay), where Nansen, as a boy, had often lain in ambush for wild duck. While their building operations were in progress, they lived in a pavilion close to Lysaker railway station—a pavilion which has since been transformed by the painter, Otto Sinding, into a comfortable house with a splendid studio. But up to this time it had never been inhabited. The floor was close to the ground, and it was very cold; the water in the pitchers froze hard every night. 'That winter,' says Mrs. Nansen, 'cured me of the habit of feeling cold.' In this dog-hutch and in this biting cold, Nansen set himself down to his book upon Greenland—he had no difficulty in recalling the atmosphere of the inland ice.

If he took an hour's holiday and became a human being again, he repented of it afterwards. But he was for ever going over to watch the progress of the new house, in the details and arrangements of which he took a keen interest. The 'high seat' and the bed, in the old Norwegian style, were

executed from his own designs by Borgersen, afterwards so well known as a wood-carver. The house, which was built by Mrs. Nansen's cousin, Architect Welhaven, was finished in March 1890, but they had moved into it long before that. It was Biörnstierne Biörnson who gave it its name. He rose from the 'high seat,' champagne-glass in hand, and said: '*Godthaab skal det hede!*' ('It shall be called, Good Hope!')

Godthaab lies in the bight formed by a little projecting ness, sheltered and secluded, and quite alone. In front of the house is a wooded and grassy slope, leading down to the shore, whence the fiord stretches wide and open right to Nesodland. Here Nansen had his foot on his own ground, and could keep his own boat for sailing on the fiord.

But in the autumn he set off on a long lecturing tour, accompanied by his wife. He spoke in Copenhagen, London, Berlin, Dresden, Leipzig, Munich, and Hamburg. We have received from one of the most eminent geographers in Europe, Baron Ferdinand von Richthofen, a very valuable statement of the impression which Nansen at this time left behind him in scientific circles. We quote from a letter, dated May 17, 1896:

'As I have been confined to my room for several weeks, and am not yet permitted to do more than the most imperative work, I unfortunately cannot give myself the pleasure of entering upon a detailed account of Dr. Nansen's visit to Berlin. I hope, therefore, that you will accept in its stead the following brief notes.

'Fridtiof Nansen was here in November 1890, two years after his memorable crossing of Greenland, and a year and a half after his return to Norway. As he wanted to complete

his book describing the expedition, he had hitherto been unable to accept any of the repeated invitations he had received to visit Berlin. On November 8 he lectured before a meeting of the Geographical Society. He was warmly received, for we had all followed his daring journey with interest. The peculiar magic of his personality, which never



NANSEN'S HOME

fails to affect those who stand face to face with him, was strongly felt during the delivery of this lecture. He took us all captive by the magnetism of his immovable will. We saw in him a strong man marching towards a clearly realised goal, and clinging with tenacious energy to a well weighed and carefully projected plan. We were strongly impressed with this feeling, even as he told of his crossing of Greenland,

and how he had "burnt his ships" before setting forth on what was then regarded as a foolhardy act of daring. And it was with growing enthusiasm that the meeting hung upon his words as he went on to sketch in outline his great new scheme for reaching the North Pole. Many were of opinion that the enterprise was altogether too hazardous, and were doubtful of the premises on which he based his belief in its possibility. But not one among his hearers doubted that if the thing was within the range of human possibility, Nansen was the one man predestined to carry it out. On looking into the reasons for the brilliant success of his first undertaking, one could not but recognise that they lay in the care with which every detail of the plan was thought out, the sedulous forestalling of every possible contingency, the physical training which enabled him to cope with all physical difficulties, the talent for making the most of mechanical aids to locomotion, and finally, the indomitable strength of will. Although, no doubt, this new project far surpassed the former enterprise in magnitude and daring, yet all the precautions necessary to secure a fortunate result seemed to have been conceived on a proportionally larger scale.

'Such, my honoured friend, is the impression Nansen left behind him. No one who was present can ever forget the picture of the handsome, well-knit young man who so modestly told the story of an accomplished feat, and sketched in such simple words the outlines of a still more daring enterprise. Every one felt fully assured that whatever determination, strength, and intelligence can do to vanquish the hostile forces of Arctic nature might be confidently expected of Fridtiof Nansen. And although we cannot quite rid ourselves of the idea that the assumptions on which the scheme is founded are not as yet fully established, yet we are con-

vinced that Nansen's clear insight will realise the actual conditions when he comes face to face with them, and that he will wisely confine himself to attempting what is physically possible, instead of clinging with stolid obstinacy to the plan once laid down. In this confidence, we look forward to seeing your gallant young countryman return with a rich harvest of scientific results, followed as he is by the warm sympathy of the whole civilised world.

'One thing I must add to my account of the impression produced by Nansen. I must note the happy combination in him of a remarkable spirit of enterprise with a strong scientific sense. These two qualities are not often found together. Especially in our age of athletics, it may almost be said to be the rule that the most daring exploits—for example, in mountain climbing—are carried out purely for their own sake and to satisfy a mere love of adventure. So much the more heartily should we applaud the man who is impelled by higher motives to the conquest of the greatest physical difficulties. Nansen's lecture left no doubt of his keen interest in, and thorough understanding of, the problems connected with Arctic research. He took especial pains to acquire and communicate a scientific insight into the physical conformation and conditions of Greenland; and he has clearly a no less enlightened sense of the scientific significance of polar exploration.'

Soon after Nansen's return from his lecturing tour, the last part of his great work, *The First Crossing of Greenland*, appeared—completing a book of over seven hundred large octavo pages. This work, together with his *Eskimo Life*, was his chief occupation during the first half of the interval between the two great landmarks in his career. It may not

be out of place, therefore, if we here say a few words of Nansen the man of letters, and of his relation to the other two Nansens whom we already know—the man of science and the man of action.

We have long ago pointed out that his temperament is poetic, that he can give himself up to his moods, yet without letting his moods get the better of him in the sense of impairing his energy or his resolution. On the contrary, in this happily endowed nature, even moods seem to transmute themselves into motive forces and to stimulate to action. It is characteristic of both the expeditions which have made his name famous, that they could be conceived only by a creative imagination. Not without justice does a German art-critic thus express himself with reference to Lessing's bust of Nansen: 'If one had never heard of Nansen, and knew nothing of his aims and his achievements, if one had not the slightest idea whose head was represented, one would, nevertheless, feel instinctively that the features here reproduced must be those of a man who not only possessed fortitude enough to brave the greatest dangers with iron will and invincible energy, but who was also endowed with a clairvoyant imagination, inspiring him with the most daring dreams and with the firm belief that it was his vocation to realise them.'

So far as we know, this imagination has never been applied to any poetical effort, properly so called. A childlike expression in one of his letters from Bergen to his father is significant in a wider sense than he intended: 'I have really nothing to write about, and when I have nothing to write about I can't write.' As an author, Nansen cannot make something out of nothing—he cannot create. He never takes up his pen until he has something to write about,

whether it be an adventure or a scientific observation. But when he has matter to keep him going, he at once proves himself an extremely lively narrator. He takes such pleasure, indeed, in the recollection of an interesting experience, that he is apt to overload his presentation with details, to the injury of the general artistic impression. But his inborn talent is unmistakable. One can trace, even in his very early writings, the effects of a long communion with Nature; where it has seriously taken hold of him, everything inessential falls away, and the lines of his picture become large and potent, like the lines of a snow-clad mountain.[1]

If we look into his style in *The First Crossing of Greenland*, we can still recognise these characteristics of his first attempts at authorship. This life in the open air is so dear to him in all its details that he dwells upon even the smallest of them—sometimes with an almost boyish delight. But here, too, we can everywhere discern, when the action culminates, or when the love of Nature inspires him, a rare faculty of description, a noteworthy talent for narrative. As a snow-shoer presents his most typical aspect at the moment of 'the great leap,' when every nerve is strained for the decisive effort, so is it with Nansen's style. It is at salient points, where it dashes ahead at lightning speed, and every word goes straight to the mark, that it most deeply impresses us. But here, in his first carefully elaborated performance, we can also recognise with pleasure the even flow of the narration throughout. The work is very broadly planned, too broadly, if we look at it from the artistic point of view alone. If romantic interest were the

[1] See the extracts in Chapter V. from *A Tour on Snow-shoes from Voss to Christiania.*

main thing to be aimed at, the drift-voyage along the coast, and the actual crossing of the inland ice should, of course, form the real substance of the book, set in the slightest possible frame. But it is not his object to produce a work of art in this sense. He is composing a geographical document, the report of an enterprise undertaken in the cause of science; and, for science, the material history of the scheme, its context, so to speak, and its details, are of the greatest interest. When an artist sets about painting an animal, he selects and emphasises its essential features, so as to make an effective picture of it; whereas the descriptive naturalist is bound to reproduce every possible detail. In constructing this book, Nansen was in the position of the naturalist rather than the artist. It is not written simply for the amusement of an idle public; it is a link in the chain of geographical research, the experiences it describes are to serve as a guide for others, and precisely what the general reader thinks superfluous may be of decisive moment for the Arctic traveller of the future. The reader who cares only for æsthetic enjoyment, and is impatient to come to the exciting parts, may think it unnecessary to go so minutely into the equipment of the expedition; but for the man of science, and for future explorers of unknown ice fields, every word will have its significance. A chapter of some sixty pages devoted to snow-shoeing, its history and development, may seem to delay the narrative disproportionately; but when we remember that it was in the Greenland Expedition that the Norwegian snow-shoe made its first appearance in the history of science—in military history it had already played a part—such a chapter cannot be regarded as out of place, in this book of all others. The same may be said, with still

greater justice, of the historic surveys; they are absolutely necessary in order to place the main matter of the book in its right perspective. The fact that Nansen succeeds in retaining our interest through all these heterogeneous chapters is due to the unflagging animation of his style, the clearness of his exposition, in short, to his unusual talent for treating science popularly. In our literature, which is specially poor in this department, he takes an eminent place.

At the end of his *First Crossing of Greenland*, he prints some extracts from his diary at Sardlok and Kangek. 'It is no active life I am leading here,' he says; 'in fact, I am fast turning Eskimo. I live as the natives do, eat their food, and am learning to appreciate such dainties as raw blubber, raw halibut skin, frozen crowberries mixed with rancid blubber, and so on. I talk to the people as well as I can, go out in my kaiak, fish, and shoot on land and water. In fact, I begin to see that there is really nothing to prevent a European turning Eskimo, if he only has his time before him.'

He devoted himself to the unusual sport of drawing halibut—the same halibut—three or four times up to the surface from a depth of a hundred fathoms, in such cold that his cheeks, nose, and chin were in danger of being frost-bitten. At the end of February he was at Kangek. 'It is delightful,' he writes, 'to see the days lengthening, and the sea shimmering in the rising sun, to feel it shine almost warmly, to go out seal-hunting in the grey of the morning, and to return in the evening with the daylight not yet quite spent. Society, steam, great thoughts, and great misery—all lie far, far away. To roam at large and enjoy life—that is our sole concern.'

The Greenlanders themselves have given a sketch[1] of Nansen and his comrades which deserves to be quoted. 'Nansen was unusually clever,' says the writer, 'at learning the language; for although it was only six and a half months since he landed here, he could understand almost everything, and whether he was out in the surf helping to beach our kaiaks, or visiting us in our houses, he spoke without much difficulty, and so that we could easily understand him, as he understood us.



SKETCH BY E. WERENSKIOLD

'We missed them all terribly when they went away; they were such handsome fellows it did us good to look at them, and they took to us in return, so that we came almost to regard them as our own countrymen. We went and visited them whenever we pleased; and besides, they were not at all particular, but ate almost anything we gave them, except rotten, fermenting things, and said that they liked it.' Nansen, the writer continues, was very soon able to manage a kaiak without any special appliances for safety. 'He would accompany us both in stormy weather and when we were going to be out far into the night, paddling with the best of us.'

[1] Translated by Mrs. S. Rink from the Greenland newspaper, *Atuagagdliutit*.

When Nansen had finished his account of the journey across Greenland, he recorded in detail his impressions of the Greenland natives in his book entitled *Eskimo Life* (1891). This is not only an excellently written and unusually interesting book, but also a most important document towards the elucidation of Nansen's character. He quotes in the preface the old saying: '*Amicus Plato, amicus Socrates, magis amica veritas;*' and he tells what he believes to be the truth with characteristic courage, and here and there with a recklessness which is perhaps no less characteristic. His views on Christianity and Christian Missions are so diametrically opposed to the accepted doctrines that if he had had popularity in view he would never have written this book, or at any rate would have kept his heresies in the background, and aimed at an objectivity which should wound people less. But it was not in his nature to do so. On the contrary, he gave free rein to his enthusiasm on the one hand, and to his defiant youthful audacity on the other. There can be no doubt that where he sets about weighing the civilised man and the child of nature against each other his own character gets in his light and prevents him from taking a quite impartial view of things. But for that very reason the book becomes a valuable piece of self-revelation.

Nansen is of course right when he dwells upon the sins of which so-called civilisation has been guilty in its dealings with the primitive races. 'What has become of the Indians? What of the once so haughty Mexicans, or the highly gifted Incas of Peru? Where are the aborigines of Tasmania and the native races of Australia? Soon there will not be a single one of them left to raise an accusing voice against the race which has brought them to destruction?'[1]

[1] *Eskimo Life*, p. 341.

Every day the newspapers bring us accounts of outrages committed in the name of civilisation, which fill one with indignant horror. But when Nansen places himself entirely on the side of barbarism, when he represents it as a misfortune that the Eskimos should have learnt to read and write, because they cannot possibly devote time to these acquirements without sacrificing some of their expertness as seal-hunters, many people will be unable to follow him. There is, as it seems to us, something too individual in this point of view.

What, then, can induce Nansen, the man of science, the explorer, one of the dauntless pioneers of civilisation, to talk of its 'venomous sting,' and so forth? One is tempted to ask whether any event in his life has embittered him against society? We know of no such event. There is one utterance in *Eskimo Life* that might lend itself to misunderstanding in this sense. 'When I see all the wrangling and all the coarse abuse of opponents which form the staple of the different party newspapers at home, I now and then wonder what these worthy politicians would say if they knew anything of the Eskimo community, and whether they would not blush before the people whom that man of God, Hans Egede, characterised as follows: 'These ignorant, cold-blooded creatures, living without order or discipline, with no knowledge of any sort of worship, in brutish stupidity.' With what good right would these savages look down upon us, if they knew that here, even in the public press, we applied to each other the lowest terms of contumely, as for example, 'liar,' 'traitor,' 'perjurer,' 'lout,' 'rowdy,' &c.? while they never utter a syllable of abuse, their very language being unprovided with words of this class, in which ours is so rich.'[1]

[1] *Eskimo Life*, p. 100.

This passage no doubt came straight from the heart; for Nansen himself is of a type more akin to the old Norsemen than to certain of their descendants, in whom the lust of battle has degenerated into mere quarrelsomeness, and who cannot strike, but rather scratch and claw. He is of a largely-moulded and at the same time gentle nature, such as we find in the Sagas, self-confident, and determined to follow his own path, but without a trace of low pugnacity. The goals he has set himself are too great to permit of any pettiness. Like the Greenlanders, he 'cannot afford to waste time in squabbling.'

Personally, therefore, he has always held aloof from this trumpery warfare. The troll-urchins in the Dovre-King's Hall[1] have never really molested him. When he wrote his book about the Eskimos, he had no quarrel whatever either with humanity in general, or with Norwegian society in particular. But all the influences of his childhood and his youth attracted him to the primitive forms of life. To 'roam at large' and to 'enjoy life' are for him synonymous. To most of us, the privations involved in life in an Eskimo hut would be unendurable, while its filthiness would revolt us. To him, these things are trifles. He has been accustomed from childhood upwards to go without food for long periods, and then to eat whatever comes in his way. House, hut, or tent—it is all the same to him. The joys of action and achievement await him without. He can dash with his kaiak into the jaws of the tempest, he can stalk the walrus and the polar bear—all in the midst of vast natural surroundings. He is attached to this people because it is amiable, warm-hearted, and full of brotherly kindness and true Christian charity. But he is also filled with admiration

[1] See *Peer Gynt*, Act. II. Sc. 6.

for it, because it has conquered such hard natural conditions. For the conquest of nature is, in his eyes, 'the great problem of humanity.' 'To some people,' he writes, 'existence is so easy that they need only plant a bread-fruit tree in their youth, and their whole life is provided for. Others, again, seem to be denied everything except the strength to battle for life; they must laboriously wring from hostile nature every mouthful of their sustenance. They are sent forth to the outposts, these people; they form the wings of the great army of humanity in its constant struggle for the subjugation of nature.

'Such a people are the Eskimos, and among the most remarkable in existence. They are a living proof of the rare faculty of the human being for adapting himself to circumstances and spreading over the face of the earth. The Eskimo forms the extreme outpost towards the infinite stillness of the regions of ice, and as far almost as we have forced our way to the northward we find traces left behind them by this hardy race. The tracts which all others despise, the Eskimo has made his own. By dint of constant struggle and slow development, he has learnt some things that none have learnt better.'[1]

Here we are at the very heart of the matter. It is not misanthropy, but a peculiar dual feeling towards Nature, which inspires Nansen with his boundless sympathy for these primitive people. It is a feeling akin to that of the male for the female: he loves her, he will conquer her. For most of us, it is civilisation that brings with it the enjoyments which humanise existence: art, literature, social intercourse, all that lends beauty to life. Nansen is no barbarian; he is devoted to science, and he can appreciate art. But for him

[1] *Eskimo Life*, p. 4.

the enjoyments of civilisation have always taken a second place in comparison with work in its service. Work—whether with the microscope or in the kaiak—is the Alpha and Omega of his creed. That is why, in his eyes, it would be no misfortune for the Eskimos to be unable to read and write. They would have all the more time to become experts in their vocation, and to subjugate nature.

If we consider the amount of reading involved in the preparation for these books, we see that they represent a very respectable sum total of work. This, however, was no more than quiet mental occupation, which does not take too much out of a man. What especially occupied him in these years was the preparations for the Polar Expedition. The equipment involved an immense expenditure of thought—from the construction of the ship to the minutest detail of the commissariat. Even the selection of the crew must have meant a great deal of correspondence—no fewer than 150 foreigners applied for leave to join the expedition. The list is headed by Englishmen and Americans, then come Germans, Danes, Swedes and Finns, Italians and Frenchmen, &c. A Venetian wrote: 'Oh, monsieur, faites-moi vivre, ce que j'appelle vivre, et ne me condamnez pas à languir! Par prière!!'

But all this he himself, we confidently hope, will one day relate in his book upon the Polar Expedition. We will not anticipate him, and merely note that the labour was enormous. Everything had to pass through *his* head, every one of the thousand details. Compared with this mental toil, the labour of dragging the sledges over the Greenland ice fields was little more than child's play. It engrossed him day and night, and encroached terribly on the few hours that were left for his home and his family. The strain upon his vital

force was incomparably greater than in any of his previous efforts.

In the beginning of 1892 he again set forth on a lecturing tour, this time in England, the profits going to the expedition fund. He spoke in London and in the other great towns of England, Scotland, and Ireland, visiting Liverpool, Manchester, Sheffield, Birmingham, Hull, Newcastle, Edinburgh, Belfast, Dublin, Bristol, and many other places.

'His lectures,' writes a friend in England, 'were highly appreciated and made a great success. His mastery of the English language was remarkable. He made himself thoroughly heard and understood. Of course he read his addresses; but to my thinking his speaking was most effective when, at the end of his last lecture before the Royal Geographical Society, he laid his manuscript aside. It was, in a sense, a farewell to England, inspired by a depth of feeling which stirred his audience to enthusiasm. I can assure you that when Nansen returns, a magnificent reception awaits him in this country.'

Late in the autumn of this year his ship was launched.

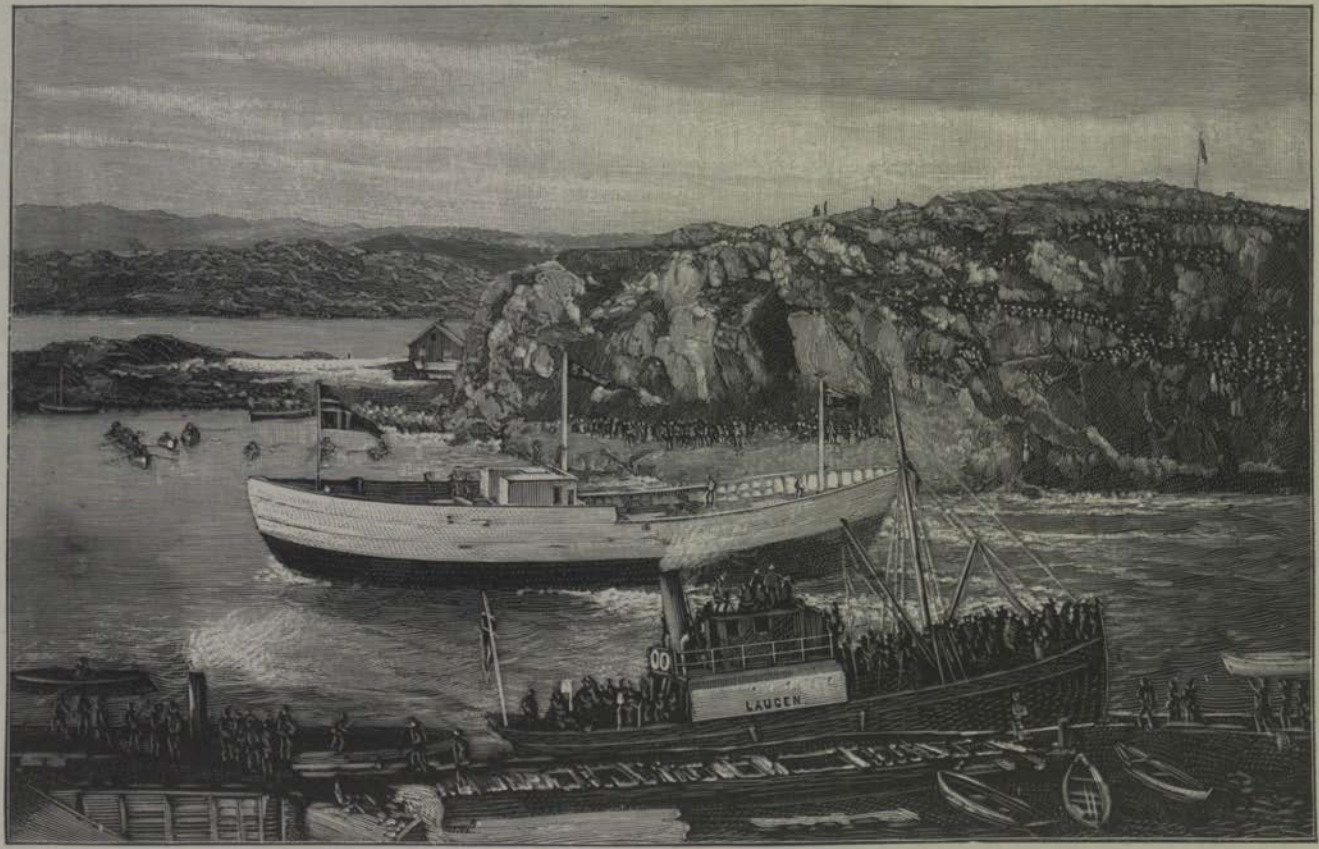
'A whole troop of invited guests,' writes Gustaf Retzius, in the *Aftonblad* for November 3, 1892, 'took the morning train on October 26, from Christiania to Laurvik. There had been ten degrees of frost in the night; snow had fallen, and a thin white veil lay over hill and valley. Gradually the mists dispersed, and the morning sun shone out with the peculiar softened splendour characteristic of a clear winter day. Nansen himself receives us at Laurvik station, and leads us to a whale-boat, lying at the pier, with a crow's-nest at its foretop. It carries us down the fiord, then turns to the left and runs in shore. Here, in Rækevik Bay, lies the hull of a ship, shored up on the beach, with its stern to the

sea. It is Fridtiof Nansen's new ship, which is now to go off the stocks. The hull is high and broad, black below, white above. The three goodly masts of American pitch-pine are still lying alongside her on the wharf. Three flagstaffs have been erected on the deck, two with flags, the one in the middle without. It is reserved for the pennant bearing the ship's as yet unknown name, which is to be hoisted after the christening. There are many speculations as to what the name is to be. People guess *Eva*, *Leif*, *Norge*, and *Nordpolen*.

'Thousands of spectators have gathered around Colin Archer's wharf, thousands have clambered up on the rocks. But round the great vessel lying shored up on the slips stand groups of sturdy figures in working clothes, with grizzled hair and furrowed features, carefully examining her lines and build. These are whalers and seal-hunters who have year after year braved the dangers of the Polar Sea. There are also many workmen among them, ship's-carpenters who have helped in the building, and who now regard their work with just satisfaction. But the master builder is the stately man with the serious refined features and the long white beard. It is Colin Archer.

'Fridtiof Nansen, followed by his wife, now mounts a platform erected close to the vessel's bows. Mrs. Nansen steps forward, breaks a champagne bottle against the stem at one strong blow, and says loud and clear: '*Fram skal den hede*'—'She shall be called Fram.'[1] At the same moment the flag is hoisted on the unoccupied flagstaff, and the word can be read in white letters upon a red ground. The last moorings are now quickly cast off, the last supports knocked away, and the great vessel glides, at first slowly, then

[1] *Fram* = Forwards.



THE LAUNCH OF THE 'FRAM'

quicker and quicker, stern-foremost, down the sharply sloping groove which leads to the water. It plunges deeper and deeper. For a moment it almost seems as though it were going to sink, or at any rate to strike the bottom. But as the stem approaches the water the stern rises, and finally the whole vessel floats away, to be brought back in a few minutes, laid alongside the wharf, and there moored. At the moment when the whole bulk of the ship had taken the water, a great wave swept shoreward and washed over the rocks and over the onlookers who had perched themselves close to the sea. We could see them from the distance scrambling like wet flies up the slippery rocks. A large boat which had been swept ashore by the wave was with difficulty saved, but without misadventure.

'On the platform, by his wife's side, Fridtiof Nansen stood tall and erect, and watched the scene. All eyes were bent upon them. We could not but think what their feelings must have been at the moment when the vessel glided into the sea: feelings of gladness that the prologue to the long dark drama that was to be enacted in the polar night was now happily concluded; feelings of pain at the thought of the long separation that lay before them.

'For all who were present, it was a moment of deep emotion when, amid the booming of guns and the thundering cheers of the multitude, the *Fram* plunged into the sea and rose again proudly in its freedom. Many were afterwards heard to say that it was one of the most impressive experiences of their lives. As the ship glided forth in the silvery light reflected from the calm surface of the sea, we seemed, in a flash of foresight, to be reading the Saga of the future. We seemed to glance down the vista of her destiny, to see her, in waters no keel has yet furrowed, spreading

light over regions no eye has yet seen. And when we came to think of the stern realities which must one day surround the vessel and its crew on their daring quest, the cold, the darkness, the storms, the icebergs, and all that follows in their train, we could not but feel a touch of awe. But in Fridtiof Nansen's serene, unembarrassed, steadfast glance, there was no trace of doubt or anxiety. He has the faith and the will-power that can move mountains.'

Colin Archer, the builder of the *Fram*, belongs to a Scotch family. His name is widely known and highly respected in Norway. 'It is not many years since our pilot boats were sadly deficient in point both of speed and of safety. They were neither well built nor well designed for the work they had to do, so that it frequently happened that the boat went down and took the pilot with it. Mr. Archer devoted himself to the task of furnishing our pilots with a faster and safer sea-boat. After more than twenty years' work, he has met with such success that the pilot can now face almost any weather in one of his boats, and that those he leaves at home need no longer tremble and turn pale when the surf is lashing and the storm sweeping over the sea.'[1]

In a speech which he made that day, Mr. Archer said that he would never have been able to solve this peculiar problem, so unlike any that he had hitherto attempted, if Nansen himself had not furnished him with the key; it was Nansen's constructive sense that had throughout pointed the way. But Nansen had no less right on his side when he praised Colin Archer's talent, and expressed the belief that never before had a ship been built for Arctic work with any approach to the care and thought which had been devoted to this one. Let us hope that Colin Archer's most note-

[1] See *Folkebladet*, September 15, 1893.

worthy 'pilot boat,' which is to pilot humanity through ice-packed channels and over unknown waters, may stand the test as well as the other 'Archer-boats,' its predecessors.

The *Fram*, which in reality somewhat resembles a pilot boat, is specially designed to play the part allotted it in Nansen's general scheme. His idea is not to burst his way by force through masses of ice, but to let the *Fram* lie firmly frozen in and be carried forward by the current. It is not a fast ship, then, that he needs, but a vessel which can bear an immense pressure of ice without being crushed. It had to be so designed that the ice should not be able to grip its sides and squeeze them together, but should, as it were, wedge itself under the hull and force it up out of the water. For this reason the sides and bottom are strongly rounded. In order to secure the greatest possible strength the ship had to be as small as possible, and particularly short in proportion to its breadth. This would facilitate both the raising of the hull when the ice got packed under it, and the handling of the vessel among the floes when it should be released from its ice-berth.

The *Fram's* length on deck is 128 feet; length on water-line, 113 feet; keel, 102 feet. Her extreme breadth is 36 feet; breadth at water-line, exclusive of ice-skin, 34 feet; depth, 17 feet. When she is lightly loaded, the draft of water is 12½ feet. The keel, which is 14 inches by 14 inches, American elm, projects only 3 inches below the planking, and its edges are well rounded. The frames are double, being built chiefly of Italian oak, obtained from the dock-yards at Horten, where it had been stored for thirty years. The lining is pitch-pine. The outside planking consists of three layers: the inner one being 3 inches oak, the middle one 4 inches oak, and outside all an ice-skin of greenheart,

increasing in thickness from 3 inches at the keel to 6 inches at the water-line. Both bow and stern are protected by a covering of iron bars. The total thickness of the ship's sides is 24 to 28 inches, and their power of resisting pressure is thus very considerable; but it is greatly increased by powerful beams or stays of wood or iron. The hold is divided into three water-tight compartments. The structural strength of the *Fram* is thus quite exceptional. Never before has a vessel been so fortified against the attacks of the ice.

During these years of toil Nansen enjoyed breathing spaces, when he gathered his friends around him. These pleasant interludes in his work will never be forgotten by those who took part in them. They remember the dinner when all the painters—Werenskiold, Eilif Peterssen, Skredsvig, Munthe, Sinding—gave themselves up to high jinks without beginning or end, when they would on no account listen to polite speeches, but rushed into the kitchen and set the pump going whenever any one began. Nansen was thoroughly at home among the painters—he himself dabbled a little in their handicraft,[1] and, during his Bergen days, had worked in the studio of old Schiertz, who thought he had the makings of an artist in him.

They remember, too, that Midsummer Eve, when Lammers sang of the hero Roland, and Nansen went down to the bonfire and piled on wood.

By way of exemplifying the hours of relaxation in the life of labour depicted in this book, one of the authors will

[1] Nansen draws excellently; all the plates for his zoological, anatomical, and histological essays are drawn by himself. We may mention, as a characteristic instance of his energy in every department, that he was not content with himself making the drawings for his works, but also learned lithography, so that, for example, the plates in his principal essay on the nervous system are drawn on the stone with his own hand.

note down his recollections of a luncheon party at Nansen's house, the day after the launch of the *Fram*.

It had rained overnight, so that the roads were ankle-deep in autumn mud. Nansen himself met us at the station in the highest of spirits.

When we reached his house (a quarter of an hour's walk from Lysaker station) it was raining. The fiord stretched before us dark and depressing, the grey autumn sky seemed to droop disconsolate among the pine stems. But in Nansen's study, branches and logs were crackling and smouldering cosily upon the open hearth.

Here everything is in old Norse style. Nansen himself, as before mentioned, designed the furniture of light pine-wood, beautifully carved with dragon arabesques. Over the high seat hangs a tapestry of an antique pattern.

Luncheon was served in the cosy little dining-room, and merriment was the order of the day. Full justice was done to one dish after another; and Nansen is not the man to forget to season the viands with talk. He was, of course, still full of memories of the previous day, and one incident of the launch after another was related and discussed. Mrs. Nansen had to analyse her sensations at the moment when she broke the champagne bottle against the bow and said: '*Fram skal den hede!*' Some one else related how Archer was seen to close his eyes when the ship began to move; and so forth.

When the champagne appeared, Nansen proposed Retzius's health, and Retzius thus ended his speech in reply:—

'This is a delightful home of yours, Nansen, and I cannot but marvel at your resolution in tearing yourself away from it to set forth into the polar winter, and brave

an unknown fate. You, a biologist, have the sea stretching before your very windows, with all its inexhaustible and fascinating treasures. Here you are in the midst of all your old friends, the marine fauna—with worms, molluscs, and mud-eels at your beck and call. We scientists, who so highly appreciate Nansen the biologist—the man who has successfully steered many a voyage of exploration over the unknown depths of the biological world, and especially through the intricacies of the nervous system—cannot quite reconcile ourselves to the thought that you are deserting this field of labour to go so far and to be absent so long.

'But you have yourself determined it, you have decreed your own destiny.

'And besides, when the explorer returns from his adventurous voyage, the biologist will find the field of investigation as rich as ever. You may make your mind easy—we who are left at home will not reap the whole harvest—there will be plenty left for you to do. We are as yet only at the beginning of our work.

'There is only one thing I fear, and that is that Fridtiof Nansen, when he comes back from the North Pole, will discover that the earth has a South Pole as well.'

As we clink glasses and drink Nansen's health, strange thoughts fill our minds. Who knows when this circle of friends may meet again? Not, at any rate, until one of them shall have returned from afar.

Nansen is, as usual, quiet and at his ease. As the later courses come on, we get him to tell us some of his stories. He has an unusual gift of oral, no less than of written narrative; he describes picturesquely, with powerful touches, and, on occasion, with charming humour. First we get him on the polar bears. Then some one asks about

the time when he and Mrs. Nansen climbed Norefjeld on New Year's Eve.



NANSEN AND MRS. NANSEN ON SNOW-SHOES

'Yes, it was really New Year's Eve; it was in 1890. Eva and I had gone up to Kröderen for a breath of fresh air, and we made up our minds to climb Norefjeld—to the

top of course. We slept at Olberg, and were rather lazy in the morning, so that it was about ten o'clock before we made a start. And we didn't hurry at all at first, so that the day slipped on. It's something of an ascent even in summer; but in winter, when the days are short, you have to look sharp if you want to get to the top while it's light. And then we had taken a course of our own—well, it may have been the most direct, but it certainly wasn't the quickest. The snow was very deep, and we hadn't any guide. At last we couldn't possibly use our snow-shoes any longer; it got so steep we had to take them off and carry them. But we were bound to do it all the same; you can't face about and leave a thing half done, however much ice and frozen snow there may be. The last piece almost beat us; I had to cut our way step by step with my staff. I went ahead, Eva followed. It reminded me of what the little girl wrote in her school essay: "For every step we went forward, we went two steps back. At last we reached the top."

'Well, we too reached the top, but it was dark, and we had been at it from ten till five with nothing to eat. So now we set to and picnicked in the snow and the pitchy darkness, on *mysost*[1] and pemmican mixed.

'You may thank heaven we don't treat you to that to-day,' said Mrs. Nansen.

'Yes, you made wry faces over it, Eva,' growled her husband. 'But it's all a matter of habit.'

We lingered over our walnuts and our wine while Nansen continued: 'Well, there we two sat alone in the snow at the top of Norefjeld, something like 5,000 feet above the level of the sea. The frost-wind nipped our cheeks, the darkness grew denser and denser. Far away in

[1] Goat's milk cheese.

the west there lingered a very, very feeble gleam of day, the last in the year. We had to see about getting down again.

'We struck a course more or less in the direction of Eggedal. From Högevarde[1] down into the valley is perhaps about a Norwegian mile,[2] which would have been nothing at all if it had been light. But it wasn't so easy to find our way in the darkness.

'Off we plunged into the night, I ahead and Eva following. We went like the wind over rocks and slopes, and it was no joke to keep our balance, I can tell you. When you've been out in the dark for some time, a sort of dim shimmer seems to rise from the snow; you can't call it light, but it isn't absolute darkness either. Heaven knows how we managed to get along sometimes, but manage we did. All of a sudden I had to stop short, and shout to Eva. It was too steep for snow-shoes, there was nothing for it but to sit down and slide. It's not good for your trousers, but it's safer in the dark.

'The wind nipped our ears till they tingled, for it was freezing like anything; and on we went. Suddenly, as we were going at full speed, my hat blew off—a little grey hat of the sort I usually wear.

'So I had to put the brake on, and get to my legs again. Far up I saw something black upon the snow, scrambled up to it, seized it, and found it was a stone. The hat must be further back—yes, there it was. Again I clutched at a stone. Hats seemed to swarm all over the snow; but when I came to put them on they all turned to stones. Stones for bread may be bad enough, but stones for hats are not a whit better. There was nothing for it but to go ahead hatless.

[1] The top of Norefjeld.

[2] Seven English miles.

'Eva remained where I had left her. "Eva!" I shouted "Eva!" The answer came from far, far below.

'There seemed to be no end to that mile. But we managed to keep going somehow; and now and then we could use our snow-shoes too. All of a sudden the ground seemed to fall away at our feet; we stopped at the verge of a precipitous bank—how high it was we couldn't see, but over it we had to go, one first, the other after. The snow was deep, and when that is so, you can clear incredible distances.

'We had long ago lost our bearings, if we had ever had any. We only knew that we must go ahead. At last we came to a dead fix. Eva had once more to sit and wait while I cast about for a way. I went groping around in the darkness and was a long time gone. All of a sudden a thought struck me: suppose she were to fall asleep! Such things have been known to happen, and she must be dead tired. "Eva, Eva!" I shouted. "Yes!" she answered right enough, but this time from far, far above. If she had fallen asleep I don't know that I could ever have found her again. As it was I groped my way up to her, bringing with me the good news that I had found a watercourse. I won't say that a watercourse is the best possible snow-shoe course, especially in pitchy darkness, when your stomach is empty and your conscience ill at ease—for this was really a reckless piece of work. But somehow or other we did contrive to make our way down the watercourse.

'Now we were among the birch trees, and at last we struck upon a road. So the worst was over. Far down, we came upon a hut. I thought it looked cosy enough, but Eva said it was dirty and horrid. And now she was quite lively; she was determined to push on. Just like a woman.

'To make a long story short, we at last reached the parish clerk's house in Eggedal. It was now late at night, so we had to knock the people up. The parish clerk was quite frightened when he heard we had come from the top of Norefjeld.

'This time Eva was not so particular about her night's lodging. She had no sooner sat down in a chair than she fell asleep; it was twelve at night, and she had been on her feet for fourteen hours.

'"He's quite worn out, poor boy," said the parish clerk; for Eva was wearing a grey snow-shoeing dress, with a short skirt and trou..rs.

'"It is my wife," said I.

'You should have heard the exclamations. "Oh Lord, oh Lord, you don't mean to say so! Think of dragging your wife with you over the top of Norefjeld on New Year's Eve!"

'But now came supper—and as soon as she smelt that it was not *mysost* and pemmican, she wakened up.

'It ended in our resting three days at the parish clerk's —and that was our New Year's Eve ascent of Norefjeld. I thought it great fun; but I don't know what Eva would say.

'When we left Eggedal the poor boy and I drove down Numedal to Kongsberg, and the boy was almost frozen to death.

'But one has to go through a little hardship now and then to enjoy life properly after it. If you don't know what cold is, neither do you know what it is to be warm.'

The time draws on for the great departure. The summer of 1893 has come. In the evenings, while his

secretary is writing at full speed, and Nansen is walking up and down directing and dictating, he will suddenly slip out and appear on the slope in front of the house. Here planting is going on—gooseberry and currant bushes, apple and pear trees. Nansen himself points out to the gardener where every tree, every bush is to stand. 'It will be splendid soil,' says the man, as he fills the holes with mould mixed with seaweed. 'Oh yes, I hope they'll grow,' says Nansen. The evening sun throws long shadows from the great pine stems in front of the house, the waves wash softly, in a long slow swell, against the beach. The nurse comes out of the house carrying little Liv, who is to be put to bed.

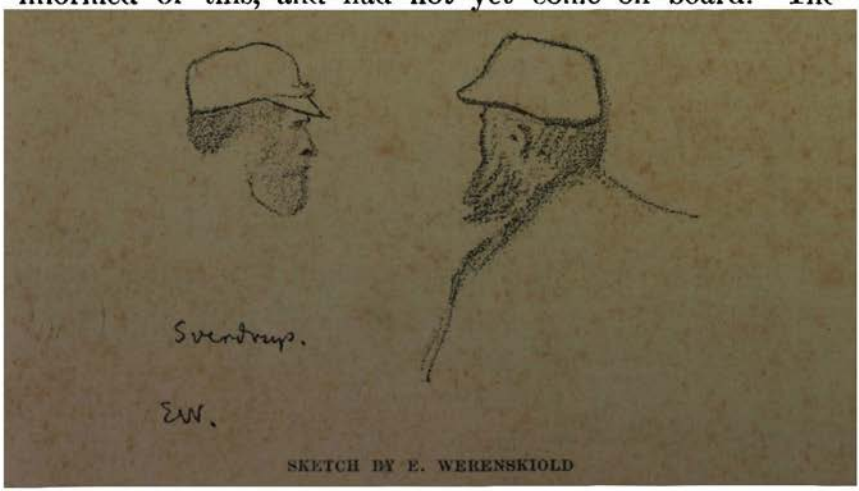
How long will be the shadows cast by these bushes and trees before he comes back? How many evenings will the sun disappear behind the ridge, before current and wind and wave bring his ship home again? Evening after evening, month after month, year after year!

On Midsummer Day the *Fram* lies at Pipervik ready to start. Only a small group of Christiania people have gathered to stare at the clumsy-looking ship, which still lies at its berth long after the time appointed for the start.

So slight is the notice taken of an achievement in the bud. When he comes back again, all Christiania will turn out to receive him. But men are always so. As though it were nothing to conceive this great design, to take this immense responsibility, to bear all burdens until you are ready to drop under them—and to stand erect on the quarter-deck and take your life in your hands. There were not many that day who remembered the old saying which

had been cited at Rækevik when the *Fram* was launched: '*Magnos homines virtute metimur, non fortuna.*'

But among those who had gathered to see Nansen off were many members of the Storthing. By two resolutions, which must be reckoned to the credit of so small a people, the Storthing had contributed a sum of about 15,000*l.* to the expenses of the expedition. To-day it had adjourned in order to bid farewell to its leader. But Nansen had not been informed of this, and had not yet come on board. The



SKETCH BY E. WERENSKIOLD

members of the Storthing waited for hours, and at last could wait no longer.

Even at the last moment there were details of business that Nansen had to attend to. The whole morning passed, and he had had scarcely a moment to exchange a word with his wife. The farewell was of the shortest. When he came downstairs, little Liv was brought to him smiling. He took the child in his arms: 'Ah yes, you laugh, Liv, but I——!' He sobbed.

Then he jumped into the little petroleum launch, steamed up the fiord, boarded the *Fram*, taking no notice of any one,

went up to the bridge, and gave orders for the start. Those who saw his face at that moment will never forget it.

One picture from his story of that New Year's Eve expedition has often risen before our minds during these years of waiting. She sits alone upon the mountain, and gazes forth into the impenetrable darkness, so long, so long. Then a voice is heard from far off on the snow-field. He is there! He is coming!

CHAPTER XVIII

BARON VON TOLL AND THE NANSEN EXPEDITION

At the end of the year 1892, Baron Edward von Toll was ready to start upon his second journey to the New Siberia Islands and the coast of the Arctic Sea between Sviätoi Nos and Khatanga Bay, at the expense of the Russian Academy of Science.

His previous journey had taken place in the years 1885–86, and he had brought back with him a comprehensive knowledge of the whole region, and of the means of communication there available. On these points he was undoubtedly the first living authority.

In December, 1892, Nansen applied to him to know whether he could send from Siberia to Norway a number of good Siberian sledge-dogs, or whether it would be possible to pick up such dogs at the mouth of the Lena or at the New Siberia Islands, if the *Fram* were to call there. Baron von Toll, after discussing the matter with several officials and men of science, came to the conclusion that it would be best to have the dogs sent to Khabarova, on Yugor Strait, a point at which the *Fram* must in any event touch. It would not be advisable to place the depôt of dogs further east; for the *Fram* might be blocked by the ice in the Kara Sea, and thus unable to reach the point where the dogs, so necessary to the success of the expedition, awaited her. Immediately before

starting, Baron von Toll wrote to Nansen to this effect, promising at the same time to establish a second depôt of dogs at the mouth of the Olenek in East Siberia; for the East Siberian dogs were unquestionably superior to those of West Siberia.

Among those whom Baron von Toll had consulted on this matter was Privy Councillor W. Troinizki, who had formerly been Governor of Tobolsk, but was for the moment resident in St. Petersburg. He informed Von Toll that sledge dogs were still in use among the Ostiaks, and recommended him, as he passed through Tiumen, to apply to an English trader, named Edward Wardroper, who would give him all possible help in this matter.

The advice proved excellent. Wardroper was able at once to lay his hand upon the right man both for buying the Ostiak dogs and conveying them to Khabarova—namely, Alexander Ivanovitch Trontheim, who was then engaged in fishing operations on the Sosva. Before Baron von Toll had left Tiumen a contract had been concluded with Trontheim, through Wardroper's intermediation.

Trontheim proved to be the very man for this difficult piece of work. Born in Riga, of German parents, he had since 1876 been settled in Siberia, where in 1878–79 he had accompanied the Danish traveller, H. von Teichner, on his journey down the Obi. Shortly after, he entered the service of that well-known patron of polar exploration, A. M. Sibiriakoff, and made a voyage with him in the steamship *Obi*, first to Yugor Strait and then to Norway. In 1888 he shipped on board the *Labrador*, which, under command of Captain Wiggins, had just reached the mouth of the Yenisei. When the *Labrador* arrived at Yugor Strait, Trontheim left the ship to accompany young Mr. Morier on his journey

from the Polar Sea, right through the tundra district, and over the northern spur of the Ural Mountains to Berezoff.

On January 10, 1893, Trontheim was at Berezoff, where great numbers of Ostiaks and Samoyedes had gathered for a taxation meeting. After careful trials, he selected and bought thirty-three dogs, which he conveyed to the village of Muski on the Lower Obi, his point of departure for the journey over the Ural Mountains to Yugor Strait.

Of this journey an account is given in a pamphlet written by A. Kryloff on the basis of Trontheim's oral narrative, and published in Tobolsk under the title of *To Meet Nansen.* Baron von Toll, in his report to the Secretary of State, Von Reuterskiöld, makes copious extracts from this pamphlet.

After having hired a herd of 450 reindeer, thirty of which were to be killed for rations on the way, Trontheim left Muski on April 4. The caravan, with four dogs attached to each sledge, followed the course of the river Woikara up to its source in the Ural Mountains, crossed them by way of the Choila Pass, and then followed the river Lemva until it joined the Usva. Here they arrived on April 22. The slipperiness of the snow, which made it almost impracticable for reindeer, and the exhausted condition of the animals, forced them to remain in camp until May 7.

On the night of the 7th, Trontheim got under way again, and next day reached the river Warkuta. Its banks are tolerably well wooded; but from this point northwards the trees rapidly dwindled in height. On May 16 the caravan entered upon the treeless tundra country, where they could find only dwarf bushes to burn; and about the Karataikha, where the country became extremely swampy, even this fuel failed them.

On June 2 they reached Baldino Lake, in which the Sylva, a tributary of the Kara, takes its rise. On June 22 they came in sight of the open sea. The next day they saw the little church and camp of Khabarova, and that evening reached the town.

To his great relief Trontheim learned that no steamer or other vessel of any kind had as yet appeared. During the following days the north wind drove masses of ice towards the coast, packing Yugor Strait and the sea beyond it, as far as the eye could reach. Not until July 10 was the sea once more free from ice, and Trontheim now looked anxiously every day for Nansen's arrival.

The *Fram* meanwhile had left Vardö on July 21 (new style), and headed for the southern point of Nova Zembla, in order to escape the ice at the entrance to Yugor Strait. At midnight they got into a thick fog, which forced the *Fram* to cast anchor and to lie there for two days, which Nansen occupied in zoological observations and investigations. Early in the morning of July 25, the fog lightened a little, and the first ice was visible on the horizon, slowly drifting towards them; but it soon disappeared again. They had scarcely made twenty miles when they were again enveloped in a thick fog and compelled to cast anchor. It cleared in a few hours, and then they got into a belt of drift ice. 'It was a great pleasure,' says Nansen's secretary, O. Christophersen, who accompanied the *Fram* as far as Yugor Strait, 'to be on board the ship and see how admirably it is adapted for meeting the difficulties of polar navigation. It is impossible to describe how easy and unimpeded is the progress of the *Fram* through waves full of crashing ice floes. Even if the fairway seemed absolutely blocked by the closely packed floes, the *Fram* was not hindered a moment in its course. It

steamed quietly ahead, clearing its path with its mighty steel prow, and hurling aside ice floes weighing a hundred tons and more, without any noticeable shock. For aught we could tell when not actually on deck, we might have been in open water with a very slight sea on.'

At Khabarova, in the meantime, day after day passed, and Trontheim wondered if Nansen were ever coming. At last, on July 18 (old style), he saw smoke on the horizon, and presently a steamship appeared—there could be no doubt as to its being the *Fram*. Trontheim got hold of a little Samoyede boat, and went out to meet the steamer. When he hailed her and gave his name, he was at once taken on board. A tall and very determined-looking man in a greasy working jacket came to meet him. Trontheim at first took him for one of the engineers or sailors; but presently he saw that it must be Nansen himself. Nansen greeted him in the friendliest way, and asked how he had prospered on his long and difficult journey. Then the two at once went ashore to inspect the dogs.

Nansen's personality made an exceedingly deep impression upon Trontheim. He thus describes him: 'Nansen is a tall young man. His every motion, his every word, expresses energy, resolution, and strength of will. In his intercourse with his subordinates—all of them picked men—he is pleasant and genial. All the heavy work on board is equally apportioned among the ship's company, and there is no distinction between the sailors, the captain, and the chief himself, who everywhere and in everything sets a good example. Even the doctor takes his part in the ordinary work of the ship. . . . And this community of labour, this absence of all class distinction,' says Trontheim, 'is the bond which holds the whole expedition together, and justifies the

hope that in hours of difficulty and danger it will succeed in defying fate.'

The *Fram* remained at Khabarova several days, awaiting the arrival of the schooner *Urania*, which was to bring up a cargo of coal. Nansen employed this time partly in examining into the state of the ice out at sea, partly in shooting and making geological studies along the coast. Trontheim was a daily guest on board. When Nansen came to know him better, he wanted to enlist him as a sailor, and offered him seventy roubles a month for three years. But Trontheim was not inclined to undertake the adventure.

July 22 (old style) was the last day of the *Fram's* stay at Khabarova. Coals had to be shifted from the coal-bunks into the stoke-hole—a task in which all took part, with Nansen at their head, everything going with the greatest good humour and merriment. Then they went ashore to make a trial of Trontheim's dogs, and found that it took eight of them to draw a sledge with three men upon it. Nansen was satisfied with the trial, and the dogs were taken on board. When Trontheim asked for a certificate that he had conscientiously carried out his contract, Nansen exclaimed: 'A certificate is not enough! You have performed your task admirably, and done the expedition a very great service. I am empowered to present you, in the name of His Majesty the King, with a gold medal in recognition of the valuable assistance you have rendered us.' Thereupon Nansen handed Trontheim the 'King Oscar II.' medal, and with it a strongly worded certificate, written in German.

As there was no sign of the *Urania*, Nansen concluded that she must have been stopped by the ice, and determined to weigh anchor.

Trontheim and Nansen's secretary, O. Christophersen,

now went ashore, and as they would probably have to wait some time for the *Urania*, which was to take them to Vardö, Nansen left with them an ample stock of provisions. Christophersen was entrusted with seventy-nine telegrams to all parts of the world, which were to be despatched on his arrival at Vardö.

Hitherto the weather had been calm; but on this evening a change set in. The wind rose, and presently it was blowing half a gale. Precisely at midnight, the departure-signal sounded from the *Fram*, and she steamed up the Strait and out to sea. Nansen himself preceded her in the steam-launch, to make sure of the fairway, and pilot her along.

Baron Von Toll, however, was not content with what he had already done for the expedition, but, in the course of his further journey through East Siberia, continued to take all possible measures for its assistance in case of disaster, not only by establishing a depôt of dogs at the mouth of the Olenek, but also by placing supplies of provisions on the New Siberia Islands.

In passing through Irkutsk, Von Toll consulted with A. M. Sibiriakoff, and made the acquaintance of his partner Nikolai Kelch. The Baron explained to him how important it would be for the crew of the *Fram*, if their ship should meet with the fate of the *Jeannette*, to find depôts of provisions on the New Siberia Islands. Kelch was fired by the idea of offering the gallant Norwegian and his comrades true Siberian hospitality. As Von Toll intended to visit regions the natives of which go every summer to the southern islands of the group, he thought he would easily find seal-hunters who would undertake the establishment

of the depôts; and Kelch at once placed 1,500 roubles at his disposal for the carrying out of this plan, and the purchase of dogs to be left at the mouth of the Olenek.

The provisions were bought at Yakutsk, and sent with all speed to the coast, at the mouth of the Yana.

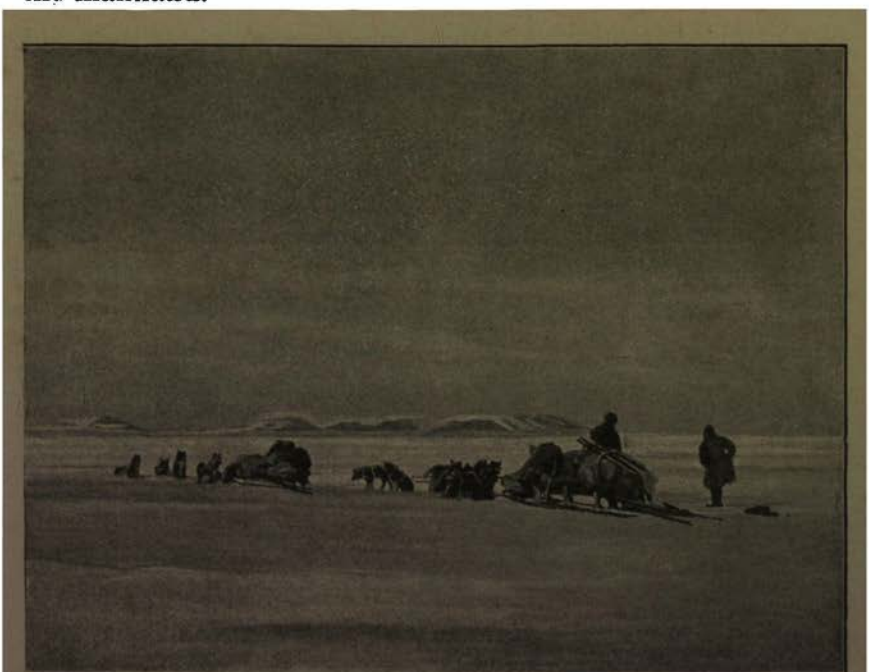
But when Von Toll arrived here it proved more difficult than he had expected to find trustworthy agents for establishing the three depôts he had determined to provide for the expedition. A Russian seal-hunter, Michael Sannikoff, who had formerly spent several summers upon Liakhoff Island, at first undertook the care of two of the depôts. But finding that his dogs were not in sufficiently good condition, and that he could not at the moment procure sufficient food for them, he withdrew his promise, and would only undertake to see to Von Toll's third depôt, on Little Liakhoff Island.

During his voyage down the Lena, Von Toll had already determined to extend his journey to Kotelnoi, the northernmost of the islands, and therefore himself undertook to establish the other two depôts. To this end Jacob Sannikoff, a merchant, who took a lively interest in Nansen's fortunes, placed at Von Toll's disposal three dog sledges—that is to say, three sledges with a team of twelve dogs apiece—and as much dogs' food as could readily be procured.

Von Toll had arranged as follows the disposal of the depôts: One was to be at Stan Durnova on the west coast of Kotelnoi, at 75° 37′ N. lat.; one about seventy miles further south, at 74° 55′ N. lat., on the river Urassalach, and the third on the south coast of Little Liakhoff Island.

If the crew should desert the ship and land on the northernmost of the New Siberia Islands, it would find in the first depôt rations for twelve men for eight days. This would

enable them to make their way along the coast to the depôt on the Urassalach. Here they would find, in a house which Baron von Toll had built in 1886, provisions sufficient for one month. At the third station, in a little house at the southern point of Little Liakhoff Island, they would find provisions for two months, which would enable them to reach the mainland.



VON TOLL'S EXPEDITION TO THE NEW SIBERIA ISLANDS

From an Instantaneous Photograph

In a letter to Baroness von Toll, dated Aidschergaidach, on the Arctic Ocean, June 6/18, 1893, which has been most kindly communicated to us, Baron von Toll has given a lively description of his journey, which proved far more adventurous than Trontheim's expedition from Muski to Khabarova.

By a pious fraud, Von Toll had left his wife in ignorance of his destination. 'We have great reason to thank God,' he writes, after his safe return; 'for a God there is, who helps every one who honestly strives towards a good end; and you will find in what follows many clear proofs of His power.'

Thus the letter continues: 'On April 16, when I sent off my last letters from here, I was ready for a start, and those "mammoth-districts" which I said in my telegram that I was going to explore were the New Siberia Islands. This prevarication was designed to save you anxiety. I could not do otherwise, and I know you will forgive me. In the first place I had to fulfil a formal promise; for when Sannikoff "funked the job," there was no one but I to undertake it. Neither Djergili nor Ovandje would have gone to Kotelnoi without me; and even if they had they would never have placed the depôts with the necessary care. And what would have been the result if Nansen, after losing his ship, had taken refuge at Kotelnoi, and found nothing there?'

All that Von Toll could get out of the people at Yakutsk was thirty-six dogs, three sledges, and a considerable part of the dogs' food required for the journey, which was estimated to take thirty-six days. Some more of the requisite dogs' food he would find on Great Liakhoff Island, where it had been left by Sannikoff's searchers for mammoth tusks; and Sannikoff would bring a further supply to Little Liakhoff Island, when he went there to establish the third Nansen depôt. The dogs were in anything but good condition; of the sledges one was warped and crooked before they started, another was patched along the bottom, while the third, though good, was very heavy.

The expedition consisted of Baron von Toll, his com-

panion Schileiko, a Cossack named Rastorgujew, two Lamuts, Djergili and Ovandje, who had accompanied Von Toll on his journey of 1885, and a Yakut named Uiban. The last mentioned, who was a lumberman and a capital dog-driver and guide, unfortunately fell ill before the start, and had to be left behind. In his stead they took a Tungus named Maxim. As to the natives of his party Baron von Toll writes:

'My friends the Tunguses care for nothing but reindeer, and do not understand how to treat dogs and still less how to drive them. We three, Schileiko, Rastorgujew, and I, had therefore to help our drivers to train and manage the dogs. Djergili drove my sledge, Maxim drove Schileiko's, and Ovandje Rastorgujew's. It was quite amusing to see that not one of my drivers knew which of the dogs should be the leaders. On the first days of the journey, Djergili tried all twelve one after another, until at last he fixed upon a pair, consisting of his own hunting-dog, which he had brought with us out of affection for it, and a little lean white sledge-dog with black spots. These leaders from first to last distinguished themselves with the most admirable consistency by totally disregarding the cries of "Nano, nano" (to the left), and "Tock, tock" (to the right), and further by their uncontrollable mania for always going straight for the worst torosses instead of avoiding them. Before starting from Aidschergaidach, Djergili cut himself a huge driving-staff, which he kept carefully lashed to the sledge and never once used, as it was far too big and heavy for him. When we wanted to stop the sledge, he would helplessly call "Toi, toi," and at sharp turns all we could do was to commend ourselves to the care of a benevolent Providence. As a matter of fact, we only once capsized, and then Djergili fell under the

sledge. But by good luck it was not then loaded, as it had been, with twenty *pud*, but only with two *pud;* for this happened on the way back from Stan Durnova upon Kotelnoi. Djergili was always very proud of his hunting-dog, which could snap up lemmings while running, with the result that it overfed itself and grew too fat to work. Ovandje, in spite of his unaffected hatred for every animal that does not wear reindeer's horns, developed a real talent as a sledge-driver. He beat his dogs with the sledge-staff and with a whip, which is not generally used, so that his sledge always took the lead. Djergili, on the contrary, was too kind-hearted ever to beat the dogs on the whole course of the journey; so that naturally my sledge was always last. Maxim's method with his dogs was conversational. He told them long stories in one uninterrupted flow, always consisting of the same words: "Chara bar, ol tugui, chara bar, ol tugui," &c., that is to say, "There is something there, there is something black;" and in this disingenuous way he tried to egg them on by suggesting to them the idea of imaginary game. Schileiko nicknamed him *Chara* (the black); they got on well together, and his half-weeping, half-laughing countenance afforded Schileiko a perpetual fund of amusement.'

The expedition started on April 20 (old style) from Tschai-Powarnya (the Tea Hut) at the foot of Sviätoi-Nos, and, the weather being fine and clear, covered in thirteen hours the seventy versts to Maloje-Simovje on Liakhoff Island, after which it continued its way in alternate snow- and rain-storms to Michael Sannikoff's hut, Micha Stan, on the south-west point of Little Liakhoff Island, which they reached on the evening of April 24. On the morning of the 28th they arrived safe and sound at Bear Cape, the southern

point of Kotelnoi, and proceeded, without giving their dogs much rest, to their first main destination, Urassalach, where the hut which Von Toll had built in 1886 was to serve as a storehouse for Nansen's provisions. 'I had hoped to spend some days in my house,' Von Toll writes to his wife, 'and get my depôt arranged at once. But this was no easy matter. All the three rooms in the hut were filled to the very roof with snow. The innermost room, which in 1886 I had used as a bath-room, appeared to me best fitted for storing the provisions. In the first place, then, we had to dig and sweep the snow out of the house before we could even begin to make our deposit. Schileiko and I set a good example, and by the second day we had at least cleared a passage through to the bath-room. The Cossack took the lead in the work. Djergili lifted two shovelfuls of snow (the Tungus shovels are no bigger than a child's spade), and said with the utmost simplicity, "How can I do more?" Ovandje and Maxim were not much better. Here, of course, we felt keenly the want of a good workman; but I succeeded, partly by exhortation and example, and partly by the expenditure of half our store of brandy (we had only one bottle with us) in so far encouraging my men that they began to think the work might possibly be carried through. On the night of May 3 I was ready to proceed. Ovandje was, at his own request, left behind to improve the condition of the bath-room, which was now free from ice and snow, and to store the provisions carefully, while Maxim was to accompany us to Stan Durnova, there to lend a hand in the establishment of the depôt, and then to return at once with the sledge, and help Ovandje with the final closing up of the store of provisions at Urassalach.'

On May 5 the expedition reached Stan Durnova, where,

in a pit some fifteen inches deep, they buried a case containing 'twelve pounds of chocolate, six boxes of preserved pea soup, three blocks of tea, ten pounds of butter, preserved in a zinc box, six pounds of sugar, one pound of salt, three packets of matches in a zinc box, one pound of dried vegetables, two pounds of shot, one pound of powder, 280



AT URASSALACH

percussion caps. The pit was carefully filled in to prevent the polar bears from getting at it. On the top of the case we laid a thoroughly frozen board, and covered it with snow over which we poured water, thus converting it into ice; above that, again, we placed beams and clay; then snow and water and clay; and, finally, on the top of all, a little block-house. In the chest we left a written greeting:

"*Fram*, with God." But in the pit we had planted and battened firmly into the ground a tall pole, which could be seen from a great distance; and to it we fastened a plate with the inscription "Nansen's depôt, No. 1, Stan Durnova." Against the pole we placed a pickaxe and a spade.'

Von Toll had intended to remain some time here to make scientific observations. But the dogs' food was running low, and on May 7 he had to set out on his return. At the mouth of the river Tschukotskaia they called a halt; and a snowstorm, which came upon them here, kept them prisoners from May 8 till the 11th, so that the dogs had to be put on half rations. On May 12 they resumed their march; the snow was so soft and slushy that they could not possibly drive, but had to go on foot. Schileiko went out shooting, and killed a polar bear, whose flesh made up to the dogs for the privations they had had to endure.

Thus they returned to Urassalach. 'Ovandje had been eight days alone instead of three, for the snowstorm had prevented Maxim from reaching him any earlier than we did. The unwonted loneliness, in addition to a not quite unfounded fear of the polar bears, had produced a terrible effect upon old Ovandje. He was quite unrecognisable and looked as if he had risen from his coffin. Like the unthinking barbarian he is, he was furious with me for having let him remain there, although he himself had begged to do so, thinking the work in the house at Urassalach would be easier than the toil of travelling. However, he gradually recovered, and Djergili's influence soon brought him to reason. He several times begged my pardon for having been so foolish as to blame me for the trying time he had

gone through, and to accuse me of having been indifferent to his fate.

'Schileiko had paid dear for his success as a sportsman; his eyes, which had given him trouble even at Stan Durnova, were quite closed the day after our arrival at Urassalach; he was unable to open them, and suffered terrible pain. It was very hard for me to see my comrade suffering the agonies of snow-blindness, the more so as I knew that it was due to a mistake of my own. I had taken from my medicine-chest at Aidschergaidach small portions of all the most important drugs for use on our journey, and among the rest drops of atropin. But I put too much of this tincture in a small phial, so that it burst when the liquid froze, and I had to throw it away. The only drug I had that was of any use in this case was sublimate; but I had forgotten the requisite proportions for a solution. A friend of mine, an oculist in St. Petersburg, had told me the right quantity in 1884, but I had had no occasion to use the drug during the interval, as neither I nor my comrades had suffered at all from snow-blindness. Schileiko had brought it on mainly by his astronomical work, taking the altitude of the sun; but the exertion of hunting the polar bear, and the tramp on foot over the loose snow, without snow-spectacles, from the place where he killed it to Urassalach, had made him much worse.

'I could not stand by and see Schileiko suffering without doing what I could to cure him. I determined, at all hazards, to try the sublimate, and fancied I could remember the right strength required; but I miscalculated the attenuation, and dropped three-quarters per hundred instead of three in a thousand. The result was that I went through twenty-four hours of extreme anxiety, in which I feared he

might lose his eye (I had applied the solution to the right eye alone). When these terrible hours had passed, an improvement set in. Thank God, Schileiko could now open his eyes—the pain had considerably diminished, and furthermore, the right eye was much better than the left!

'Schileiko's improvement was the signal for our departure. There was no longer any doubt that we had to reckon with an unusually early summer. So early as May 8, we noted the arrival from the south of the first birds of passage, the great silver gulls. I consoled my old men, who were shaking their heads over our situation, with the proverb, "One swallow does not make a summer." On May 12, at Urassalach, the first pair of geese greeted us. On the 15th we saw a flock of *Sommateria spectabilis* flying from the north. At last, on the 16th, at Bear Cape, my favourite bird, the *Tringa islandica*, greeted me with its melancholy *tuurle, tuurle, tuurle—kogiji*. Our case was, after all, not so desperate. There was no danger, but only the prospect of a laborious journey back. What I feared most was the loss of time, thinking that my expedition to the Anabar might be interfered with.

'On the 14th, then, we made a start from Urassalach (Nansen's depôt No. 2), the same friendly and harmonious feeling prevailing among us as at our arrival. I took leave, probably for ever, of my old house, in which I had lived for almost three months in 1886, and in which I had now again passed several days. We spent Whitsuntide at Bear Cape, and did some good work. On the evening of May 17, we bade our final farewell to Kotelnoi. When we took our last view of the island, it was bathed in clear and beautiful light, and presented a picturesque aspect which is deeply imprinted on my memory. On May 18 we camped on the

ice about forty-five versts from the island, having covered that distance on foot in ten hours. In the meantime the torosses had stealthily emerged from under their covering of snow. The surface, which had formerly been quite firm, was now a mass of slush, in which we sometimes sank up to our waists. It rained on the following day, and in consequence the water between the torosses increased greatly.

'From my diary: May 19, 6.30 A.M. On the ice between Kotelnoi and Little Liakhoff Island, uncertain where. A critical position; wet to the skin, lost in the fog; among torosses which exhaust our dogs; no wood for burning, the thermometer at zero, chilled to the bone. We have covered perhaps fifteen versts in the eight hours since our start. First we went east to south-east. Then we came upon the track of reindeer, which we followed up. Now began the torosses, with wet snow between them, more water than snow, up to our waists. The dogs will not pull unless there is some one beside them dragging or pushing the sledge. After we had gone about seven versts from our camp, we saw a bank of mist, which showed that there must be land in that direction. Ovandje and I agreed that it must be Little Liakhoff Island. Soon the bank of mist disappeared, and we were without any landmark and wet to the skin. At eighteen versts we held a consultation. We pitched the canvas tent. Djergili had thrown away the wood for burning which we had brought with us, thinking that the island was only twenty versts away. Of this I knew nothing, having gone on ahead. He and Ovandje are particularly downcast, because they feel that they have done wrong. I tried to encourage them with, (1) a distribution of chocolate on the march, (2) a cup of warm cocoa in the

tent, (3) as a last resource, the announcement that there would be brandy at Micha Stan, which Sannikoff would in the meantime have brought there. Hereupon Ovandje said to me: "Very well, sir, but if we get there and find no brandy, we shall die. And if you give us any, you must give us our fill!"

'The snow is melting on all sides, and we see nothing but water, with no prospect of getting anything dried at our poor little glimmer of a fire. Schileiko and I are in good enough spirits, the others are very downcast. As I write, I hear a shout of joy from Djergili—he sees land, the fog has lifted, and the north coast of Little Liakhoff Island is only ten versts distant! We will give the dogs a little more food, and then make a start again. On the way a flock of *Harelda glacialis* flew close over our heads, coming from the eastward.'

It was an exhausting day. 'At starting from our yesterday's resting-place,' says the diary for the 19th, 'I was so chilled, and the others no less so, that nothing but my word of command "The band to the front," could keep up our sinking spirits. This means that I headed the column, singing loudly and imitating drums, flutes, &c., and keeping up a quick march time with my feet.'

On the 21st they arrived at Micha Stan. Here Michael Sannikoff had established the third Nansen depôt, and here they stopped a while to recruit.

'On May 23 we started from Little Liakhoff Island, and arrived on the 25th at Maloje Simovje, where we found summer at its height: the river was a torrent of melted snow, and along the shore there was a broad belt of water above the ice. I wanted to be on the mainland again by the

27th, so as to celebrate your birthday with a recovered good conscience—and I managed it.

'In the clear glow of the midnight sun, and in a light frost, we set out on May 25 for our last stage upon the ice. We had first to get through the shore water, and then across tolerably good ice, till we reached the first belt of torosses. There the old toiling through the slush began again. When we started, the mountains of Sviätoi Nos to the south, which were our landmark and goal, were gleaming in a golden radiance. Now they stood out in sharp contours against a dark background. We could now see that only the upper part of the mountains was covered with snow, while the lower slopes were already bare and wore a dark-blue tinge. But it was the dark background of sky that made both the old men shake their heads ominously. Out of it there emerged a heavy cloud, like a thunder cloud, which drew up from the south-west against the wind.

'At five o'clock in the morning Sviätoi Nos darkened, for the cloud had reached it; at 5.30 it was entirely wrapt in clouds. By six o'clock the whole sky was black, and in a few minutes the storm came tearing down upon us: first hail, and then floods of rain. The frost had ceased a little before, and between the torosses our half-naked feet in our ragged shoes sank deep in water at every step. The first downpour of rain thoroughly drenched us once more. I had managed to cover the sledges with the tent in time to protect our instruments, although our bedding remained exposed. The dogs flatly declined to do any work, and there was nothing for it but to call a halt, although we had done only thirty versts. The men's spirits recovered a little when we had got into the tent and taken a dram of brandy all round. Indeed, we were not greatly depressed, in spite of the water

below, above, and around us; for this was probably to be our last encampment on the ice, and our second last stage with the dogs. The next day, the 26th, we devoted to sleep and rest. At midnight on the 26th we started; the weather was fair again, the mist had lifted, the mountains on the mainland stood out clearly before us, and we had now only to cover forty versts in order to reach them.

'After an uninterrupted march of 8½ hours, partly over smooth ice covered with water, partly over horrible torosses, and at last in knee-deep water of a frightfully low temperature, we reached the mainland on your birthday, and celebrated both it and the happy conclusion of our journey at Tschai Powarnya.

'At the foot of the most eastern of the Sviätoi Nos mountains, Chaptagaitar, we found a great commotion afoot. Sannikoff had sent fifteen reindeer to meet us, under the charge of Uiban, who had in the meantime recovered; and three companies of mammoth-ivory seekers had pitched their tents here, and were awaiting a favourable moment for starting with their reindeer for Great Liakhoff Island. They had lashed their baggage high upon their sledges, so as to be able to sit on the top of it and escape the wet. Most of them turned back when they saw how deep the water was above the ice, and only eight men stuck to their purpose. On the day of our arrival, two of these men attempted the crossing which we had just made in the other direction, but were forced to turn back. Not until June 1, did they succeed in reaching the island, a sharp frost and snowstorm on May 31 having restored the wintry aspect of things. We, too, took advantage of the moment, and drove our reindeer-sledges in great style along the coast to the western extremity of Sviätoi Nos. We no

longer needed to steer or drag the sledges, or to encourage the dogs with incessant romances, according to Maxim's ingenious system. What had become of the dogs, the brave animals who, with very little rest and on scanty fare, had dragged us, or at any rate our baggage, for fully thirty-eight days, and had well deserved a handsome reward for their service? At Tschai-Powarnya all but a few of them found their grave! We had not enough food for them, and to let them run loose on the tundra would have been dangerous, for they have still wolf's blood in their veins, and would soon have been chasing the tame and wild reindeer, and dangerously reinforcing the plague of wolves. So there was nothing for it but to have them killed—it was a horrible act of ingratitude. Only a few were spared. Djergili of course begged for the life of his "atejkan," a horrible animal, in my opinion, which had done little or no work, but regarded the whole journey as a hunting expedition for its enjoyment. I saved the life, too, of a fine old Arctic dog which had twice done me good service; but in crossing one of the many swollen torrents on our way the poor beast was drowned.'

Later in the year, twenty-six East Siberian dogs, bought by Baron von Toll's directions, at the expense of Kelch, were brought by Johan Torgersen, a Norwegian, to the mouth of the Olenek. Here he awaited the *Fram* from the beginning of August till September 25, but the ship never arrived. All Baron von Toll's observations tend to the conclusion that in the summer of 1893 the Polar Sea must have been unusually free from ice, and it is therefore probable that after passing Cape Cheliuskin Nansen headed straight north, or perhaps kept N.N.E. from the Kara Sea, in the direction of Ensomhed Island (Lonely Island).

Fridtiof Nansen's countrymen cannot but read with the liveliest interest Baron von Toll's graphic description of the fatigues and dangers of his expedition to the New Siberia Islands. The remarkable devotion and self-sacrifice displayed by a foreigner in behalf of our countryman affords a striking proof of the sympathy with which foreign nations follow his enterprise.

CHAPTER XIX

NEW SIBERIA AND THE NORTH POLE

By Baron Edward Von Toll

'Tangará [God, the ruler of the world] is far too great to trouble himself about everything. How could a great Lord ever get on without an agent?'

Thus did my old friend Djergili take up the thread of a conversation one evening by the tent fire, on the return journey from the New Siberia Islands in November 1886. Outside, the storm swept and swirled over the tundra, so that the snow-dust filtered through every seam and cranny in the tent, all over our clothes and bedding.

With a hasty movement of his lithe little body, Djergili put down his tea-cup, after having for the tenth time drained it rapturously to the last drop, and held out to me a piece of drift wood, with which he was preparing to stir the smouldering fire.

'*Toion-mo*' [my Lord], he continued, 'who is it that provides the drift wood? And who sends the reindeer in summer over to the islands? Who has scattered the big bones [mammoth tusks] over the islands? You don't think it's Tangará himself? No, it's the island's own *itschitï* [spirit] that has done all that; and beyond the sea, on the mainland, it is the *itschitï* of the mainland that looks after things in the same way. How can you think it possible that Tangará should not have his agents, every one of whom knows quite

well what he has to do? And these agents are precisely the *itschitäs.* But underlings are all alike—when they have anything to do, they want something for doing it. So when we have had a good day's hunting or earned a good day's wage we give our *itschitä* the customary fee. And it's just the same with the saints: we burn candles before them that they may secure us a good place in heaven.'

Djergili took out his snuff-box, refreshed himself with a pinch, and gazed thoughtfully before him for some time. '*Toion-mo,*' he suddenly turned to me, coming back to his favourite subject, 'I wonder whether there's plenty of drift wood, and reindeer, and mammoth tusks on Sannikoff Island[1] as well?'

I told him I had every reason to believe that there must be drift wood on the west coast of Sannikoff Land, and that there were possibly reindeer and mammoth tusks there too. Djergili's face wore an expression partly of intense longing, partly of inward rapture, at the thought of hunting reindeer and gathering mammoth tusks upon an island where no one had ever hunted or gathered ivory before.

But soon this expression vanished and gave place to one of deep cogitation. The result he summed up as follows: 'The drift wood must come there from the Lena, that's clear enough. Then if these Americans have found reindeer-horns on the second Sannikoff Land [Bennett Island] why should not there be reindeer on this Sannikoff Land as well? And as to mammoth tusks, why it's only natural,' he added, 'that there should be plenty of them, for *potop* [the Deluge] must have been there too.'

[1] Sannikoff Land, north of the New Siberia Islands, has only been seen from them in the distance, and has never been visited.

'What do you mean by that?' I asked, anxious for a further explanation.

'It's easy enough to understand, *toion*. When Noah built the ark, he intended to drive all the animals into it; but he had built it very badly, and had not made room enough in it for the mammoth. So the poor animals swam after the ark as far as their strength would carry them; but at last they were all drowned, and that's why the bodies of the mammoths now lie upon the stone ice, along with the heaps of drift wood that *potop* also left behind it. And as the flood covered the New Siberia Islands, of course it must have covered Sannikoff Land as well.'

In order to vindicate my friend Djergili's originality, I must here remark that he has never heard of Howorth's book, *The Mammoth and the Flood*. Djergili's view of these questions, like his whole philosophical conception of the world, is an independent mixture of Biblical and other legends, with old heathen ideas, and observations of his own. Djergili, moreover, could support his view by evidence unknown to the above-mentioned author—he could appeal to his own observation of the so-called 'Noah-wood,' and its constant appearance in company with mammoth bones. Wherever a quaternary birch-trunk or alder-trunk protrudes from the earth, whether upon the mainland or the islands, Djergili knows that mammoth tusks may be looked for. He had to admit, however, that his view was untenable, when in 1893 I was able to show him the fine tall alder bushes (*Alnus fruticosa*) fifteen or twenty feet high, with their leaves and seed cones still upon them, which projected from the quaternary strata above the stone ice on Great Liakhoff Island.

He then admitted that these remains of vegetation could

not have been brought there by the Deluge, and was convinced that here, on the New Siberia Islands, at the time when the mammoth inhabited them, there must also have existed a vegetation such as we now find on the mainland several hundred miles further south, close to the present forest limit. Moreover, Djergili can now distinguish from each other the several sorts of wood to be found on the New Siberia Islands—the modern drift wood, the remains of quaternary vegetation (the so-called 'Noah-wood'), and the tertiary growths which bear witness to a much warmer climate at the time when they were deposited.

So important is the part played by drift wood in the economy of these northern regions, to say nothing of its share in piloting our daring adventurers across the Polar Sea, that we need not apologise for dwelling a little upon the history of these relics of vegetation. In order to understand the matter fully, we must go as far back in the geological history of these regions as our imperfect knowledge permits.

Apart from certain Cambrian strata on the Olenek river at 71½° N. lat., and the perhaps contemporaneous strata of the Hekla-Hook formation on Spitzbergen, the earliest fossiliferous strata in the polar regions are the Silurian beds on the islands north of America, including Grinnell Land (up to 80° N. lat.), and, at the other side of the Pole, on Kotelnoi (76° N. lat.), where the rocks are composed of layers of Silurian coral. These strata were all deposited by the sea, and contain no remains of vegetation. This is also the case in the Devonian strata immediately above them, found on the islands of the North American Archipelago, on Nova Zembla, in the northern ranges of the Ural Mountains, and on Kotelnoi. In the subsequent Carboniferous period, too, a polar ocean

covered Spitzbergen, Nova Zembla, and the Ural Mountains, and stretched eastward to the mouth of the Lena.

The probability is that during the earlier Palæozoic period (the Silurian and Devonian period) a circumpolar sea must have covered the Arctic area, while in the later Palæozoic period some portions of land already emerged here and there. Among the remains of vegetation which bear witness to this fact we may mention *knorria*, *calamites*, and *lepidodendron*,[1] of which the same characteristic species are found in Ireland, the Bear Islands in the far north, and in Siberia, on the Yenisei, in 55° N. lat. These remains of vegetation furnish evidence of a continental period with extensive forests, at a time between the Devonian age and the Carboniferous age, which has been named the 'Ursa period.'

Towards the end of the Palæozoic age, in the Permian period, we again find marked evidence of a division into land and sea in the polar regions. For example, we find Permian marine deposits spread over Spitzbergen and Nova Zembla, proving that during the Permian period they were under water. Further east, on the other hand, beyond the Ural Mountains, no trace of Permian marine deposits has been found in the northern portions of the Siberian mainland; so that all this region, whose flora is mainly known from the graphite-bearing strata on the lower Tunguska, was probably dry land during the Permian period.

During the following period, the Triassic period (the beginning of the Mesozoic age), this land was surrounded by a vast sea which covered half of north-east Asia, from the mouth of the Amur to that of the Lena, thus forming a con-

[1] *Calamites*, a plant related to the existing *equisetacea* (horse-tail, soft-grass) formed large tree-like growths in the Carboniferous period. *Knorria* and *lepidodendron* also, whose present representatives are insignificant herbs (*lycopodiacea*), at that period grew into great forests.

tinuous Pacific-Arctic Ocean. During the following part of the Mesozoic period too (the Jurassic period), and the earlier part of the Cretaceous period, this ocean still covered the polar regions and north-east Asia.

This part of North-East Siberia which, during the close of the Palæozoic, and the greater part of the Mesozoic age, lay under the sea, has since been elevated and crumpled up into a series of mountain chains; while, on the other hand, the old West-Siberian continent forms an even table-land, broken up into separate plateaux, which date right back to the Cambrian period.

During the Jurassic period this table-land was covered with luxuriant vegetation, remains of which are admirably preserved in the rich fossiliferous strata around Irkutsk. The rivers of this Siberian Jurassic continent, then as now, carried tree-trunks down with them to what was then the Polar Sea, where they eventually sank to the bottom, and are preserved among the other marine deposits of that period. Thus, in the marine Jurassic strata at the mouth of the Anabar River, there are numbers of tree-trunks which strikingly resemble modern drift wood, although millions of years have passed since they floated down to the spot where we now find them. It is worthy of note that the vegetable remains, both here and in the strata deposited by the sea which at that time covered Spitzbergen, Franz-Josef Land, and Greenland, seem to belong exclusively to the pine family. This fact supports the hypothesis of climatic zones, and especially of a boreal zone as early as the Jurassic period; while the fossils from the subsequent Cretaceous period, both in the north (in Greenland) and in the south (New Zealand), seem to point to a warm climate.

Towards the end of the Mesozoic age, the coast-line of

the great Pacific-Arctic Ocean must have steadily retreated; for on all the Arctic islands we find deposits of the tertiary age, traces of a land flora which prove that they must all, at that time, have formed parts of a great continent, continuous with the continent of Siberia. Even on the New Siberia Islands and Bennett Island vegetable remains (lignite) have been found, which support this theory. Certain it is that during the tertiary age the climate was much milder than it is now, both in Greenland (where, at Atanekerdluk, about 70° N. lat., there have been found remains of some two hundred species of plants, excellently preserved) in Spitzbergen (about 78°), and in Grinnell Land (81° 42′). In these regions, now absolutely treeless, the investigations of Heer, Nathorst, and others, have shown that there then flourished such trees as the swamp cypress (now found in Florida), the walnut, hickory, poplar, oak, magnolia, hazel, lime, ash, elm, as well as grape-vines, and many other species of southern vegetation. According to Heer, the mean temperature of Greenland during that portion of the tertiary age when the fossiliferous strata of Atanekerdluk were deposited, must have been about 12° C. (53° Fahr.), and the mean winter temperature about 5° C. (40° Fahr.). Now the mean temperature is more like −8° C. (18° Fahr.), and the mean temperature of January about −15° C. (5° Fahr.). The vegetable remains from the tertiary age on the other side of the Pole (in Kamschatka, Saghalien, and Japan) seem to indicate a smaller difference between the mean temperatures of that period and those of the present day. Some writers therefore conjecture that during a part of the tertiary age the Pole may have been situated nearer Siberia than at present. If, at the Pole itself, we should find some remains of the great Arctic tertiary continent, its vegetable fossils

will help us to answer the important question whether the Pole has shifted its position since the tertiary age.

We now approach the latest period in the history of the polar area; but before entering upon it, let us cast a rapid glance over the geological structure (*tektonik*) of the Arctic regions.

Of all the Arctic localities, Spitzbergen is that which has been most closely investigated from the structural point of view. We know that it consists of a tableland broken up by a series of rifts, running north-west and south-east, as do the individual dislocations[1] in the structure.

The North-Siberian mainland exhibits, on the whole, a similar structural scheme. West of the great dividing-line which about coincides with the course of the Lena, we have a tableland broken up into smaller plateaux; and through the rifts and fissures between the different plateaux great volcanic masses (trap or basalt) have been thrust up from the depths, and have spread over portions of the table-land—over the Cambrian, Silurian, Permian, Triassic, and Jurassic strata.

To the east of the great dividing-line, on the other hand, we find a large expanse of crumpled surface, whose individual corrugations (mountain chains) run, as a rule, from north to south.

In Greenland, likewise, at the places where the originally regular horizontal stratification has been disturbed by subsequent upheavals of the crust of the earth, we find the ridges running north and south. And the same orientation

[1] The surface is in many places divided by rifts into separate flakes, like the pieces of a mosaic; and where an individual flake has been displaced in relation to the rest (has been depressed, twisted, or tilted up), the phenomenon is described as a dislocation.

recurs in the New Siberia Islands, which really form an extension of the Verkhoian mountain range.

Southern Siberia, on the other hand, belongs structurally to the Central Asian system, its geological framework running east and west.

We might call the north and south orientation of the polar mountain chains the Ural orientation, in contradistinction to the Alpine orientation of the Tethydic mountain chains, which group themselves around the present and the primæval Mediterranean (Tethys).

The Ural orientation of the Arctic mountain chains combines with a number of other facts to support the theory of a former continuity between the separate pieces of land in the polar area. It seems to me that, in order to decide the question whether all the Arctic islands, Greenland, Spitzbergen, Franz-Josef Land, &c., are to be regarded as remainder islands (that is to say, survivals from a former continuous continent), we require a closer geological investigation of the striking analogy between the structure of all these Arctic islands and that of the Siberian continent. According to my view, these islands probably represent a great Arctic-Siberian continent, rather than a separate polar continent.

What, then, was the aspect of the Arctic area during the quaternary age (the Ice Age)? On this point there are many questions yet to be answered.

One and the same quaternary formation can be traced from the Siberian mainland over to the New Siberia Islands. The mainland and these islands at that time formed a continuous stretch of land, where dwelt herds of the great extinct mammals, the mammoth, the woolly-haired rhinoceros, &c. It is the remains of these animals which

every year tempt the mammoth-searchers to make their laborious and perilous expeditions to the inhospitable islands.

But whether this fauna was contemporaneous with the European inter-glacial fauna, or rather represents its immediate successors, must still be regarded as an open question. Was the archipelago which now lies north of New Siberia at that time covered by the sea, like the Taimyr peninsula and the Petchora district?[1] Or was there north of New Siberia and Sannikoff Land a great continent covered with land ice like that of Greenland, and were the mammoth and the musk-ox driven southward to New Siberia by the gradual advance of the ice sheet?

'Are there mammoth tusks there, too?' This is the important question which my old friend Djergili was so anxious to have answered, although rather for practical than for scientific reasons. And if he should one day learn that a band of thirteen brave men have returned from the unknown regions with a rich booty—although of a more ideal nature than that on which Djergili's heart is set—my philosophic friend will doubtless come to the conclusion that Tangará is so great, so good, and so wise, that he makes his *itschitüs* everywhere keep watch and ward over the 'great island-farers.'

[1] In these regions the sea which once covered them has almost obliterated all traces of the glacial epoch; but now and then fine striations are found under moraine rubble.

CHAPTER XX

ON BOARD THE 'FRAM'

By W. C. Brögger

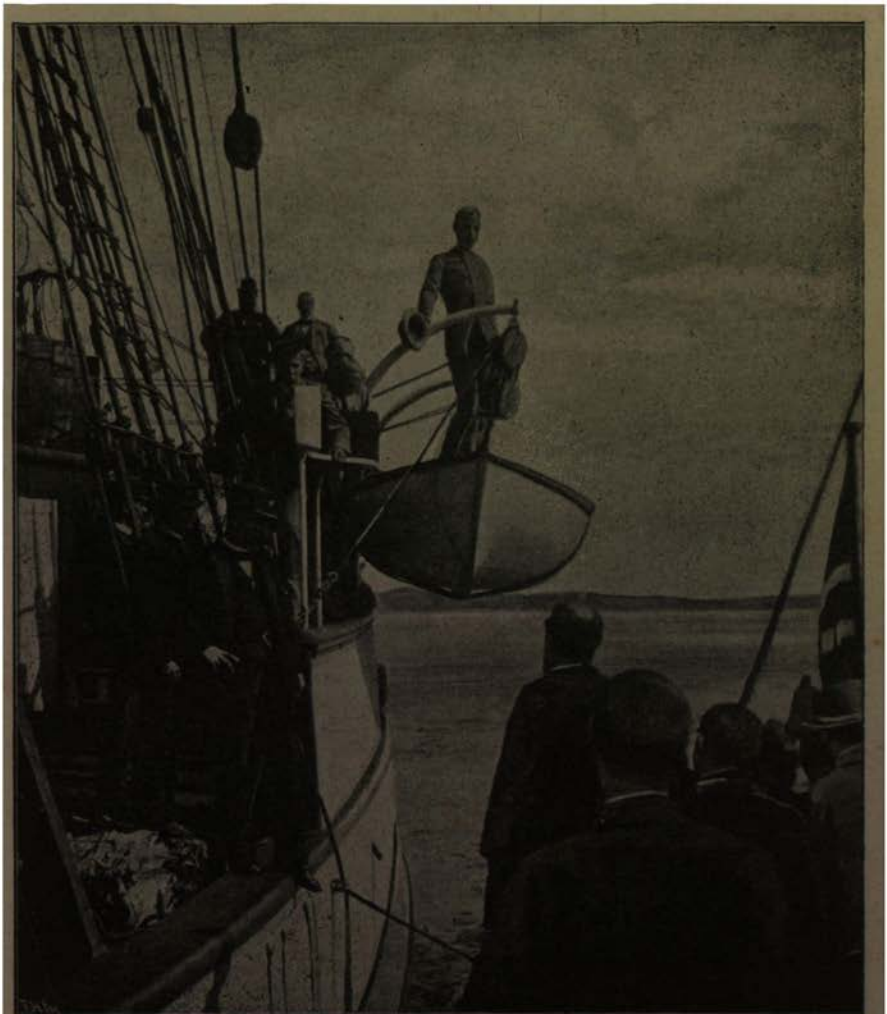
THE wind had been right ahead the whole day, ever since we started from Landegode. We had first made a tack under full sail right across the Vestfiord towards Moskenæs Island, and had now put about, and were heading straight for the passage south-east of Skraaven.

The steady fresh breeze had swept the sky clean, and lifted the sea into foam-topped waves which plashed monotonously against the broad bow of the *Fram*, as she ploughed her way through them, as heavy as an old Dutch galliot and as steady as a rock.

Up on the bridge the pilot, Haagensen, was pacing to and fro in sturdy security, now and then shouting an order to the man at the wheel in his homely Nordland dialect. But the fairway was at this point so clear that there was not very much for a pilot to do—a wide channel in front, and a steady wind blowing, hour after hour.

At the end of the bridge Nansen had rigged up for himself an open-air studio—an easel and a few boxes of pastel colours—and here he sat the whole evening, and well on into the night, in his yellow-grey silk waterproof, heedless of the cold wind (which, however, was gradually dropping), dabbing on colours, and smudging with his finger-tips on the sand-

paper, so intently and indefatigably that he rubbed the skin off. The blood trickled from the abrasion, and made a broad-red stripe down the sky of his landscape.



THE 'FRAM' IN BERGEN

And the landscape the *Fram* was passing was indeed worth painting in its sunset radiance. No pen could

possibly draw a true picture of its ever-changing splendour of form and hue.

Eastward, illumined by the reflection of the sinking sun, rose the whole mighty array of the crests, and peaks, and summits of the mainland; while to the west, the endless snow-flecked Lofoten-Wall loomed dark and threatening, a chain of Alps springing right up from the sea. The sun was so low that the island mountains lay entirely in the shadow, dark purple silhouettes against the marvellously soft and shifting colours of the evening sky.

Over the highest peaks hung heavy greyish-white masses of cloud, now melting into the strips of snow, which formed a delicate lace-like collar round the shoulders of Vaagekallen, now transpierced by the smouldering glow of the evening sun, which, down towards Moskenæs Island, formed a continuous broad band of gold over the low-lying banks of mist, like the reflection of a sea of fire in the far distance.

Above our heads stretched the pale evening sky, toning off into greenish-blue and the most delicate rose-pink, so cloudless, and bright, and pure, that it seemed as though Heaven had specially willed that Nansen and his comrades should see our land at its very loveliest, without stain or flaw, before they bade it farewell. And beneath us leaped the glorious sea, still crisping into foam-crests that shone white on the dark-blue ground—our forefathers' royal road to 'fame and might,'[1] the road on which the *Fram* was now covering the first stages of her way to immortality.

The *Fram* plodded doggedly on towards Skraaven. Hour after hour the strange sharp peak stood out right ahead of us, seeming always to recede as we advanced.

[1] An allusion to the Danish national song, *Kong Christian stod ved höjen Mast.*

The *Fram*, as we know, does not pretend to be a clipper. She has no occasion for speed, she has the years before her. Right you are, *Fram*! Slow and sure wins in the end. *Chi va piano va sano, chi va forte va in morte.*

The *Fram* was now comparatively trim and ship-shape; Sverdrup himself had superintended the cleaning process, and worked the hose the whole afternoon, while Gjertsen followed him with the mop, and whole rivers of water poured through the scuppers, carrying with them all superfluities. I should not like to swear that they did not now and then squirt a drop or two among Nansen's pastels, when they happened to pass under the bridge; but it could not be helped—the *Fram* had to bestir herself in order to look presentable when she got to Tromsö, and a daily scouring was necessary to remove all traces of the coal-shifting operations in Nærösund.

Now the coal was finally stowed away in the hold, and the greater part of the dried fish cleared from the deck both fore and aft, so that the ship began to look fairly habitable again. This clearing up had cost a good deal of trouble, for the crew was small, and things were not yet quite in working order. The chief difficulty lay in the fact that the cargo was so exceedingly heterogeneous. It is not so easy to get everything into order when an exact account has to be kept of where all the innumerable articles are stowed, so that they may always be at hand when needed, perhaps in the moment of danger. Thus every one had his own department to attend to in addition to the general work of the ship, and the average day was anything but a holiday.

Even now, one or two had not yet finished their day's work. The first mate was busy carpentering. Little Scott Hansen was every one's favourite; although a mere boy to

undertake such a voyage—he was only twenty-five—he did his man's work with the best of them. He was always in good humour, always friendly and pleasant to every one; but his eyes would beam with affection when they fell upon the barometers and chronometers and all his other dear instruments up in the chart-room, which had been placed



SCOTT HANSEN

under his care. He was to be both astronomer and meteorologist—and first mate into the bargain, and a little of everything else. He was expecting to meet Professor Mohn next day up at Lödingen, and was consequently very busy putting together a cage for his thermometers, planing and nailing away until far on in the evening.

There was not much room on the deck of the *Fram*; indeed, there was scarcely a spot that was not cumbered with deck cargo of all sorts. Almost the whole space forward was taken up with the supports for the longboats, and the superstructures over the hold, to say nothing of an immense number of odds and ends, such as a huge pair of bellows, a spare crow's-nest, a great tool-chest, &c. But aft it was even worse—what with a stack of timber (planks, beams, &c.), a number of large beer-barrels (a steadily diminishing number, it must be admitted), the huge spare rudder and spare propeller, several parts of the great windmill for generating electricity when the coal is exhausted, capacious tanks for petroleum and gas oil, one of the boats, and finally, under the bridge, a whole pile of dried fish to feed the dogs who were to be taken on board at Yugor Strait.

Around the wheel, however, was a small open space built in with deck cargo, where one could actually put one's foot on the deck and sit cosily sheltered from the wind. This was the favourite evening rendezvous of those who had time to spare for a smoke and a chat.

Here we sat this evening in the twilight, while the *Fram* buffeted its way through the seas under the Lofoten-Wall—Hendriksen, Gjertsen, Jacobsen, Christiansen (one of the Greenland party), and I. The pipes were in full blast and the talk in full swing.

Jacobsen was a capital narrator, when you could work him up to the point, which was not every day. He had seen a great deal of the world between the South Pole and the North, and had an unusually rich stock of experiences to draw upon. Whether he was recounting his adventures among the Maories of New Zealand or among the ice floes of Nova Zembla, he always managed to put an extraordinary

amount of life into the situation, and to transport his hearers into the thick of it. This evening he was telling the story of his polar-bear hunts, with one of the Bourbon princes, on Spitzbergen, and he graphically depicted for us all the manners and customs of the polar bear, its spirit of inquiry and its clumsy cunning. I have since read somewhere that at parting the prince presented him with his own gold watch; of that he said nothing, and I saw nothing of it while I was on board the *Fram*.



JACOBSEN HENDRIKSEN

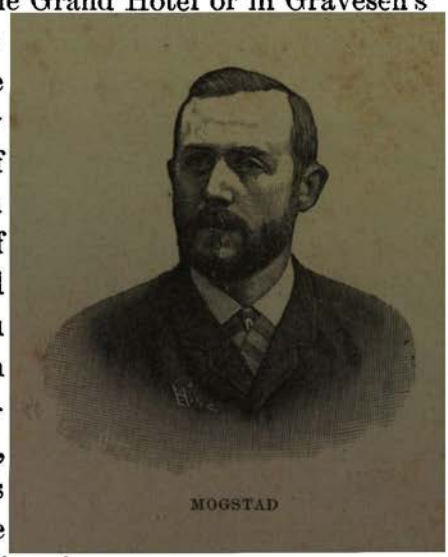
Polar bears being the topic, first one and then another contributed something of his own experiences.

'How many bears have you shot, Hendriksen, roughly speaking?' asks the mate.

Hendriksen was a Balsfiord man; the shape of his forehead, his broad cheek bones, and the whole type of his physiognomy seemed to indicate that he had Quæn blood in his veins. Be this as it may, he was a good-natured and genial fellow, and one who could put his shoulder to the wheel to some purpose when strength was needed. He had

now sailed the Arctic Sea in every direction for fourteen consecutive seasons, ever since he was nineteen; during all these years he had never felt the heat of summer, until he had come south for a short time to help in fitting out the *Fram*.

He was not a man of many words, but it was easy to see that he was by no means yearning to repeat his experience of the summer temperature. He was one of those members of the crew who preferred to pass the night in one of the 'hotels' on deck, either in the Grand Hotel or in Gravesen's —so they had christened the two longboats. It is true that these boats were deeply padded with all sorts of packages of furs, so that you could no doubt make yourself a comfortable enough bed among them, when once you had wormed your way down through the layers of hand-sledges, snow-shoes, kaiaks, and other Arctic appliances which were piled up in these airy hanging hotels *à la* Semiramis.


MOGSTAD

'I've never kept count of them,' answered the giant evasively.

'I daresay you may put it at fifty at least,' said the mate.

'Oh no! perhaps something like forty—white bears, I mean,' he added, as though a mere white bear were scarcely worth speaking about.

'Have any of you shot brown bears then?' I asked.

'Yes, Mogstad has killed several,' replied the mate. 'The first one, he had another man to help him, but that was when he was only sixteen. Five or six years afterwards he kept a bear barricaded in his lair for a whole month, and then let him out, and put a bullet in him as he ran. Oh, he's a rare hand at all sorts of things, is Mogstad —you won't easily find him at a loss.'

'But Sverdrup has shot brown bears too!' remarked Christiansen, who was now at the wheel and had hitherto not opened his mouth. He and Sverdrup were both Bindal men, so he felt he must stand up for his district; as a rule it was not easy to get a word out of him. He was evidently suffering agonies of indecision as to whether he should go on with the ship or not, although he had declared in advance that he would go no further than Tromsö. Not that the Greenland trip had frightened him off—it was other hindrances that stood in his way.

Sverdrup had now relieved the pilot, and was pacing backwards and forwards on the bridge, with an even, slow step. The *Fram* and he are in reality not unlike each other; the same indescribable air of solidity and security breathes around them both. Each has a very thick outer hull, but within all is snug and warm and sound. Now and again he stops beside Nansen, and watches him mingling the colours on his paper, but as a rule says nothing and resumes his walk, casting quick searching glances ahead over the sea.

Whoever has seen Sverdrup on board the *Fram* knows well that he is the right man in the right place. The *Fram* is no luxurious pleasure-yacht, nor is Sverdrup a model of courtly elegance—but you may be sure that

> Afloat 'twixt sky and sea,
> The first of men is he.



OTTO SVERDRUP

About the wheel the talk went merrily, undisturbed by wind or weather. The waves kept on gurgling up into the rudder hole, which, besides fulfilling its original purpose, served as a gigantic spittoon. Now and again an extra puff of wind would come, and the rigging would creak as the sails tightened; while the throb of the pistons in the engine-room supplied a monotonous accompaniment. Behind the pile of planks and the boat which shut us off from the bulwarks, we could hear Kvik, the Greenland dog, snoring and growling in his sleep, keeping up a sort of murmur of contentment, now and then interrupted by a short bark.

'That confounded cur!' said the mate. 'What do you think he's done to-day? Eaten up the soles of a pair of bran new slippers that Amundsen had got from his wife.'

Kvik was everybody's favourite on board; but he had an unfortunate habit of devouring whatever he came across in the way of leather or skins, without the smallest respect of persons. Field-glass straps and shoe-soles, portmanteaus and portfolios, everything that was made of an animal's skin was for him a dainty scarcely to be resisted, though he knew that indulgence would be followed by a beating. After all, he had to lay in strength for the voyage. Young as he was, he had seen more of the world than most dogs or men, having travelled from East Greenland to Copenhagen with the Ryder Expedition, then from Copenhagen to Lysaker; and now he was on his way from Lysaker to the Polar Sea.

'Amundsen is married, is he?' I asked.

'Why, of course he is! He's the most married of the whole lot of us. He has a wife and six children. It's a wonder he can leave such a lot at home for so long a time.'

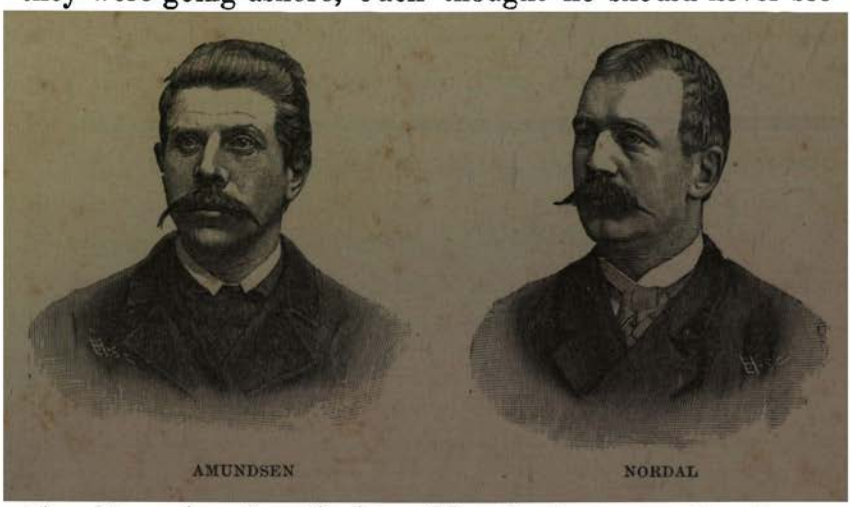
'Has he been north before?'

Yes, he was out sealing with the *Diana* one season, and

then last year he went to the Yenisei with a cargo from Shields. Oh yes, he's quite at home in the high latitudes, he is.'

'Juell, the steward, is he married too?'

'Why of course he is—married and has children,' said Gjertsen. 'That fine figure of a woman you saw on board on the way from Christiania to Horten, you know—that's his wife. She's been a lot about with him, too. A few years ago she went with him right to the Gold Coast, and when they were going ashore, Juell thought he should never see



AMUNDSEN NORDAL

his wife again—for all of a sudden the boatmen, the niggers you know, as naked as my hand, took and seized her in their arms and jumped into the water with her. Juell believed he'd seen the last of her; for you know, she's uncommonly plump and appetising, and he thought no doubt they were cannibals, these fellows.'

'Then a great many of you are married?' I said.

'Oh yes, we've almost all got some one to leave behind,' answered Hendriksen. 'Amundsen heads the list, he does, for he has five or six children; then Nordal has five, Juell

and I have four apiece, and then—let me see—Petterson has two I think, and——'

'And Nansen and I have one apiece,' added the mate.

My thoughts flew back to little Liv, and I turned my head and saw him still sitting up there upon the bridge, busy with his painting, as though he had never in his life done anything else. He had taken off his cap in order to see better, and was shading the picture with his arm or looking through the hollow of his hand to get a concentrated impression of the colour. His bust stood out boldly, the massive head with the short-clipped hair showing in sharp outline against the indescribably pure and clear colours of the evening sky. Were his thoughts bent on his distant goal, or were they at home with little Liv in her cradle?



JOHANSEN

The evening air began to grow chill, so I rose to go below and get hold of my greatcoat. As before mentioned, it was no such easy matter to make your way about on the deck of the *Fram*; so I remarked jokingly, 'One would need either four legs or a pair of wings to get about among all this litter.

'You should do as Johansen did,' answered the mate. 'He walked on his hands the other day up the steps from the fo'c'sle, across the whole of the forward deck, up the steps to the after deck, and down the companion into the cabin: and I'm bothered if he was even red in the face when he put his feet down again upon the floor of the saloon.'

'Oh, that's nothing for Johansen, he's the first gymnast in Norway,' remarked Gjertsen. 'In Paris, he made a clean somersault over forty-two men, so that the Frenchmen thought there would be nothing but a wet spot left when he came down. But he fell on his feet, as right as possible. He got a gold medal for that, too!'

'Amundsen's not bad at that sort of thing, either, you know. What do you think he did the other day down at Rörvik, while we were loading all that beastly coal? He was up in the main-top and wanted to come down to the deck, forward. Confound me if he didn't slide down the stay from the main-top to the fore-top, holding on by his hands alone all the way! There isn't another man on board could have done it; but Amundsen's fists are as hard as shoe leather, and no mistake. And then, of course, he's a bit lighter than I am, for example,' said Gjertsen.

I, unable to emulate either of these feats, made my way as well as I could over the obstacles that bestrewed the after deck, past the chart-room, in the open doorway of which several powder-casks were piled up drying, and down the cabin companion—a journey which, if it did not require a gymnast of the first rank, was certainly not to be recommended to a gouty subject or a fat man.

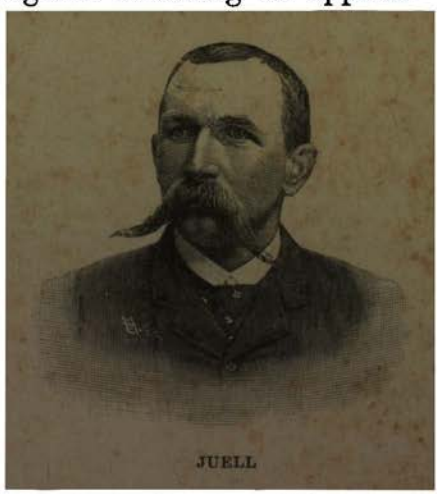
The cabin steps went right past the galley, where Juell was at that moment deep in his culinary occupations. A tempting smell of cooking greeted my nostrils, and I looked in for a moment to warm myself a little and have a chat.

Juell stood in his shirt-sleeves busy at his work, the perspiration pouring down his high forehead, and his heavy moustaches drooping like a bridle from the corners of his mouth.

'Nice and warm here, Juell,' said I.

'Warm! I should think it was! When all the pots are boiling for dinner I believe the devil himself would singe his nose if he poked it in here. It's the hardest job I've ever had in my life. I've made many a voyage in my day, but this is the first time I've shipped as cook, and if I come safe and sound back again, it shall be the last time! Take my advice, Professor, and never be a cook, whatever you are.'

'No, no, Juell—we can't all be tailors, you know. I don't suppose I'm in much danger of receiving an appointment as *chef*. But when you come home again, Juell, I hope I shall be able to give you a dinner and say *tak for sidst*,[1] and thank you for all the good dinners on board the *Fram*.'


JUELL

'Thanks for the invitation,' answered Juell. 'But it won't be for some time yet, I'm afraid. If only Peik here will hold out till we come back, I daresay it won't be such a bad trip after all.'

'Peik' was the popular name for an insulated cooking-apparatus, of Finne's invention, a great contrivance which held the warmth very long. Nansen took a lively interest in it, and several times, while I was on board, assisted at the cooking of the dinner, in order to familiarise himself with the working of Peik. And Peik cooked many excellent things. The fare on board the *Fram*, in spite of Juell's apologies for his deficiencies as a culinary artist, was really

[1] 'Thanks for our last meeting'—a common form of salutation.

capital and not at all monotonous. The menu generally consisted of soup or fish, and a dish of meat, with half a bottle of beer a head, so long as the beer lasted. I remember, for instance, that the first dinner I ate on board consisted of tinned fish-puddings from Stavanger, tinned rabbit from Australia, and wild ducks which Nansen had shot on the way. A great variety of German preserved vegetables were used in the soups, and American cranberry jam was often served with the meat. The provisioning of the ship, like all the rest of its equipment, was most carefully thought out in all its details. There was a particularly large supply of vegetables and of fatty matter, so that, so long as it stuck to the *Fram*, the expedition should not suffer from 'fat-hunger,' as the Greenland explorers had suffered. There were no less than 13,000 lbs. of butter on board, one-third of it the best Danish butter, and the rest superfine margarine, a present from Pellerin & Co. While I was on board we ate nothing but this margarine; it was of such excellent quality that I do not think anyone would have taken it for artificial butter, unless he had been told.

On the whole, the ship was lavishly provisioned; you could scarcely name a thing that was not in stock, and generally in considerable quantities. One thing, however, was entirely absent, and that was alcohol—for drinking, that is to say. The spirits for preserving 'specimens' would scarcely come under the heading of commissariat.

A passing steamer in Trondhiem fiord had thrown us a bottle of port wine, bidding us drink it at the North Pole. This was—with the exception of the beer, which was calculated to last for a couple of months—all the drinkable alcohol on board. 'You must lay in one or two bottles of champagne in Tromsö, Nansen,' I said one day in a joke, 'to drink a *skaal*

for *Gamle Norge*, when you hoist your flag on the axis of the earth.' 'I was thinking of smuggling on board one or two bottles of brandy for Christmas Eve,' he answered, 'but you needn't speak about it to the men.' The doctor afterwards swore me to secrecy, and told me that he, too, intended to smuggle a bottle or so on board at Tromsö.

I can see in my mind's eye the saloon on Christmas Eve, with the steaming toddy on the table. If I know Nansen aright, the dose for each man will be of the homœopathic order. How clearly it stands forth in my memory, that cosy little low-roofed cabin, with the small state-rooms around it!

'Saloon' is a misleading word to use. The *Fram's* saloon was little more than a cot. But the thought of the high endeavour to which it was dedicated made it seem loftier and more spacious than the most majestic hall. In itself, too, it was a cosy little retreat, exceedingly pleasant to creep down into when it was too raw and cold and wet to remain on deck.

On the front wall of the saloon, between the two entrance doors, was placed a long sofa with high end-posts carved into dragons' heads. It was covered with a heavy rug of bright Norwegian colours. In front of it stood the long narrow dining-table; by making ourselves as small as possible, we could all (except those on watch) sit down to it at once. The table-service was the same for all dishes; an enamelled tin plate and a big enamelled cup.

Over the middle of the sofa hung, in a frame, an admirably painted design for tapestry, by Gerhard Munthe, representing three fairy-tale princesses surprised by three princes transformed into bears. To the left of this little masterpiece

hung a woodland scene by Eilif Peterssen, and on the right a delicate sketch in coloured chalks by Skredsvig, representing the point and landing-stage at Nansen's home at Lysaker, with, under it, a study from Jæderen by Kitty Kielland.

Against the right hand wall stood an harmonium made by Nyström & Co., of Karlstad. It was arranged so that it could be played either by means of the keys like a piano, or with a handle, like a barrel-organ, the tune being determined by a strip of perforated paper. Its repertory consisted of over a hundred pieces, from the minuet in *Don Giovanni* and airs from *Der Freischütz*, down to the commonest dance tunes. As an institution, however, it did not seem to be particularly popular; at any rate there was a unanimous movement on board for buying a concertina in Tromsö, and great expectations were abroad as to what Mogstad would do with his violin when he joined the ship.

Over the harmonium hung a picture by Hansteen, and between the door of Scott Hansen's comfortable and tastefully arranged cabin and the back wall of the saloon, hung a little woodland sketch also by Hansteen; while over the stove (a petroleum pipe-stove made by Blunck, which served at the same time as a ventilating apparatus), in the middle of the back wall, hung a third painting, a study of birch-stems, by the same artist.

On the left wall, between the entrance to Dr. Blessing's and Sverdrup's cabins, was fixed a stand with seven Krag-Jörgensen carbines. These, however, were only a small portion of the ship's armament, which consisted in all of no fewer than thirty-two rifles and twenty-four revolvers, all of the best quality, to say nothing of two cannons, and a great store of ammunition.

Above the stand of guns hung another charming picture

by Skredsvig—the fir-trees in front of Nansen's house, a winter landscape with snow.

A little way from the table, the great mast divided the saloon into two parts. It was surrounded by a quite narrow upholstered seat, which, however, was seldom used. Loose stools were scattered about the cabin.

Light was supplied at night by several incandescent electric lamps over the sofa. The great arc lamp was not used while I was on board.

One other detail must not be omitted: the Norwegian lion on a red background in the skylight over the stove.

Such was the saloon of the *Fram*. The roof was so low that Gjertsen, Hendriksen, and Juell could touch it with their hats, and so narrow that at scarcely any part of it could two couples pass each other without turning sideways.

How every little detail between these low walls has fixed itself in my memory, from the half-frightened, half-curious expression on the faces of Munthe's princesses, to the check rug on the sofa seat, which, however, Nansen used to turn wrong side up every day, for he found that the many pairs of coal-dusty and tarry trousers left too obvious traces on the pattern, and were already beginning to soften the gay colours rather too much. 'It's got to last till we come back again,' said Nansen, 'so we must be sparing of our splendours.'

In the saloon I found the supper-table still spread, although it was already pretty late. The engineers who had been on duty had come up to have supper and draw a breath of fresh air, which they had well earned; for the stoke-hole of the *Fram*, a paradise no doubt in the polar winter, so long as the coal lasts, must in these more southerly latitudes and in summer have seemed very much the reverse.

There they sat, then, the two athletes aforesaid, Engineer Amundsen and Lieutenant and Stoker Johansen, enjoying their rest and their supper. Presently in came Scott Hansen and Dr. Blessing, and we got a warm cup of tea from the steward and attacked the supper manfully—I, indeed, for the second time.

I knew that I should probably eat only one more supper on board the *Fram*, and recollections streamed in upon me of my days on board, which had passed so quickly, along with many a thought of the days that were as yet hidden in the mists of the future. In the meantime, the supper and the talk went on as usual, Juell going backwards and forwards and assisting in both. The talk ran on all sorts of topics, but of course chiefly on the *Fram* and everything connected with her. Now the petroleum launch was the theme—one held that it was a wretched affair altogether, that it was quite impossible to keep it clean, and that after you had used it once, it took half a day to make it fit for use again, while another defended it and maintained that, with its great speed, it would be invaluable for reconnaissances, &c. Then some one described what a sharp look-out you had to keep among the open lanes in the ice, how it felt to get into an Arctic fog, and so forth.



BLESSING

I was to take no part in all this, so felt myself rather outside the conversation. I turned to the Doctor and said,

'*Tak for maden*,[1] Doctor. It will probably be a long time before you and I have supper together again on board the *Fram*.'

'Two summers, I expect,' said the Doctor, with his usual cheery confidence.

'If you have good luck, perhaps you'll be back next autumn,' said I.

'That would be the devil's own luck,' was the answer.

'No luck at all,' Amundsen put in. 'If anything worth while is to come of the trip, we must be away two years at the very least.'

A hearty burst of laughter greeted Amundsen's frank prognostication. His view of the matter was undeniably both a stoical and a practical one.

After supper I went into my cabin to rest a little and get out my overcoat before going on deck again. Nansen had given up his own cabin to me, and slept in the deck-house while I was on board. The door to his cabin was on the right, well forward in the saloon, and, like all the doors in the *Fram*, was immensely solid, with a high threshold. None of the cabins had any sort of window (the sides of the ship were twenty-four inches thick), and when the door was closed, the only means of ventilation was a couple of small holes in the door itself. It was of course pitch dark, too, unless the incandescent lamps, with which each cabin was provided, were lighted.

When you entered the cabin and turned the knob for the electric light, the first thing it shone upon was an admirable drawing by Werenskiold: 'Eva with little Liv in her lap.' Thus all that was dearest in the world confronted

[1] 'Thanks for the food!'—a formula always used at the end of a meal.

him the moment he put his head in at the cabin door. I well remember one morning when he came to fetch something before I had got up. He turned the button while still in the doorway and began to chat with me; but I saw where his eyes fell, and where his thoughts were.

Under the picture was a bench, a sofa by day, a bed by night. Here were no soft spring mattrasses, only a stuffed pallet with a pair of warm blankets and a single very meagre pillow. But how sound one could sleep on this simple couch—that is to say, when the *Fram* was not rolling so as to land one on the floor every now and then.

For the *Fram* could roll, at any rate before the cargo was shifted in the Nærösund.

Scott Hansen declared that she had described an angle of forty-six degrees in a heavy sea off Lister. It must have been an uncomfortable night; the whole forward deck was deep in water, so that the deck cargo was washing about from one side to the other, and at last there was nothing for it but to throw overboard a number of paraffin barrels. Fortunately they were only empty barrels intended for preserving the skins of bears, seals, walruses, and other game; and there were plenty of them left. Even while I was on board the *Fram*, she rolled a good deal one night, although it was not blowing particularly hard, and the sea did not run very high—indeed, there was only a long swell. In crossing the Vestfiord, on the other hand, when it was blowing quite fresh, the ship was as steady as a rock the moment she was under full sail. She was, indeed, a strange, a unique vessel. Sverdrup, who, as a rule, said little enough, could not help now and then giving expression to his affectionate surprise in a subdued 'She's a rare little craft, and no mistake!'

But to return to Nansen's cabin. On one side of the end wall was a cupboard containing the cash-box, papers, diaries, &c., the key of which was in Nansen's own keeping; on the other side, near the head of the bed or sofa, was a bookcase with a rich selection of literature of many kinds. Numbers of books had been presented to the *Fram* by Norwegian, Swedish, and Danish publishers and others. The tolerably extensive library thus formed was always at the disposal of the crew. Besides, the doctor had his own medical library in his cabin, and Scott Hansen kept a collection of books, mainly meteorological and astronomical, along with the charts in the chart room. But Nansen had picked out for his own use a number of books which he kept in his cabin. They were for the most part, of course, geographical, geological, zoological, and other scientific works,[1] but with a fair sprinkling of imaginative literature and philosophy. Ibsen and Biörnson, Vinje, Jonas Lie, Runeberg, and others were represented, some of them by their complete works; and here too were Tennyson, Keats, Byron, Frauenstedt's Schopenhauer, &c.—in short, an ample stock of reading even for the long night of the polar winter.

When I entered on my short occupation of the cabin, the greater part of these books lay in a chaos on the floor, along with all sorts of other things; so I took it upon myself to arrange them according to subject in the bookcase, and I made free use of this library while I was on board. This evening, for instance, when I lay down on the sofa after

[1] I noted the following titles: A. Geikie, *Textbook of Geology*; E. Suess, *Antlitz der Erde*; A. Heim, *Gletscherkunde*; K. A. Zittel, *Handbuch der Paläontologie*; Darwin, *Voyage of the Beagle*; Müller, *Unter den Tungusen und Jakuten*; v. Richthofen, *Führer für Forschungsreisende*; Neumayer, *Anleitung zu wissenschaftlichen Beobachtungen auf Reisen; Vegaexpeditionens vetenskapliga iakttagelser*, &c.

supper, I opened the first book that came to hand, and found it to be Nansen's *How can the North Polar Region be Crossed?* —containing his lecture before the Royal Geographical Society, and all the objections of the celebrated English sailors. It was the first time I had seen it. It made a peculiar and moving impression upon me as I read it here in Nansen's own cabin.

When I had done, I felt I must go up and see him. Until that moment I had not quite grasped and realised the significance of his enterprise. He himself was always so easy and unpretending, and on board the *Fram* everything took its daily course with such a total absence of solemnity, that I had, as it were, lost the sensation of there being anything unusual in this voyage. To cross Greenland, to start for the North Pole, to go to the end of the world, seemed no more to these men than a trip down Christiania fiord to the ordinary mortal.

I could hear Juell's quick tongue, in the saloon, supplying a running commentary to one of the doctor's stories; on the deck some one was rumbling a beer-barrel along; the piston kept up its regular throb, and the propeller its vibration, while the *Fram* clove its way foot by foot through the sea, slowly but surely—as though driven by some natural law ever onward and onward towards the unknown goal.

Nansen had lent me a camel's-fur jacket while I was on board; it was so cosy and warm that it seemed to put my skin into a positive glow when I had it on. Thank Heaven, I thought, he need certainly neither starve nor freeze so long as the *Fram* holds together.

But if the *Fram* should be crushed, as one of the English admirals prophesied?

'Then we'll take to our longboat,' Nansen had answered.

'The boats are too big and heavy,' another admiral had objected.

'We have five or six smaller boats with us,' was Nansen's reply, 'and if the worst comes to the worst, we'll get along on an ice floe; I've done it before.'

Yes, I felt I must see him and express my affection for him in the little time we could still be together. Up the companion, past the steaming galley, out into the free air of heaven!

There the *Fram* lay, heaving gently in the full glory of the summer night. We had at last drawn near the peaks of Hammerö, so that we could see their green-clad base. Before us stretched all the mountains of the mainland, those nearest bathed in a splendid purple glow, while further ahead they passed through all gradations of subdued colour from tender violet to deep grey, right down to the edge of the crisp blue-black sea.

It was strangely still. Not a soul was to be seen on the deck, forward, and when I looked aft, to the southward, I saw nothing but sky and sea. The solemn silence of the summer night took such hold on my mind that I remained leaning on the bulwarks for a long time, watching the plash of the waves against the ship's side, before I went up to him.

There suddenly flashed upon me the recollection of a little ragged urchin whom I had seen a few days before on the beach near Trondhjem while I was waiting for the *Fram*. He was going barefoot in the sand, dirty and unkempt, but beaming with health and contentment, and singing at the top of his voice, 'Jeg gaar i fare, hvor jeg gaar!'[1]

Then the thought of my own confirmation came upon

[1] 'I go in danger wherever I go'—the first line of a hymn.

me, when I sat in the church and shouted with all the rest, 'Jeg gaar i fare, hvor jeg gaar!' and heard the mighty organ-harmonies throbbing under the vaulted roof as though they indeed represented the wrath of the Lord.

Some one came along the deck whistling a merry tune; it was the light-hearted Petterson, stripped to the waist in the chill evening wind, carrying a basin and a towel and preparing to wash the grime of the engine-room off his face and body. He had been in the Polar Sea before, on board the *Hertha*, so that he was at home in these waters. What a splendidly modelled back! How fine the play of the muscles in his arms! Yes indeed, such frames as this seemed built for a tussle with the darkness and the fog and the cold and the ice. His whole personality was set to a very different air from that which was running in my head. Every line of it seemed to sing:



PETTERSON

'Vær glad naar faren veier
hver evne, som du eier!'[1]

and from all his comrades around, from the man who stood at the helm, from those who were stoking the furnace, from all who now lay sleeping in their bunks, it seemed as though the third line came chiming in triumphantly:

'Og desto større seier!'[2]

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[1] 'Rejoice, when danger puts to the test every faculty you possess.'
[2] 'And so much greater the victory.'

I could delay no longer, I must go up to Nansen. I clambered over boxes and boards, wormed my way between barrels and stacks of dried fish, and finally, in spite of all obstacles, managed to haul myself up on the bridge.

There he still sat in his thin silk waterproof, as he had sat hour after hour, defying the wind. When he saw me he rose and nodded, and said, as though apologising for having been so absorbed in his painting:

'I've just finished!' And then, without a pause, 'Have you ever seen such a lovely evening? We're lucky in our weather, and no mistake.'

'It's a beautiful country, this of ours,' I said. 'You must make haste and come home and have a better look at it!—And now let me see your works of art.'

'I have a whole bundle here,' he answered. 'You shall have the lot of them to take to Eva.'

Ah, yes—that was why he had been so busy.

'I've been down below, reading,' I went on, 'and I got hold of that English pamphlet of yours with the plan of your expedition. You didn't get much encouragement out of them, in London.'

'Oh, they didn't treat me at all badly—and there wasn't really anything to discourage one in what they said. It was just the same when I was starting for Greenland, you know; and that, to my mind, was really a more ticklish business than this. Here, thank goodness, we've got everything we can possibly want, and I hope we shall neither starve nor freeze.' He looked in my face with a frank smile and said slowly and emphatically: 'Boasting apart, no ship has ever been equipped for an Arctic voyage as this one is.'

Then he bundled up his painting things and we went below.

Two days later, on the evening of July 12, we parted at Tromsö. It had rained and snowed alternately all day long, and from the top of Tromsdal Peak, right down to the gardens along the fiord, an inch-thick sheet of new-fallen snow lay over the green leaves and the fresh grass. An icy north wind was blowing, so that the fiord seemed to reek beneath it, and you could see the squalls sweeping over the water.

Nansen and I had been afoot all day making purchases. Moreover, we had been studying geology in Tromsö Museum, had had a glass of wine at Mack's, and had, for the rest, put in our time usefully and agreeably.

I had been aboard the *Fram* in the afternoon to say good-bye, and had poked my nose into every hole and corner to fix my impressions firmly in my memory. . On board I found Mogstad, who had now joined the ship, and was to replace Gjertsen and Christiansen. He impressed me as a fine, active, fearless fellow, and was doubtless a valuable addition to the crew.

While I was busy packing my portmanteau, Nansen came down with the water-colours and pastels, the products of the northward voyage, which I had promised to take to his wife. He had placed them within the leaves of Nordenskiöld's great facsimile atlas, and remarked as he gave me the parcel: 'You'd better take Nordenskiöld's book with you; it's so costly and valuable, it would be a great pity to lose it if the luck should go against us, and we should have to leave the *Fram* behind.'

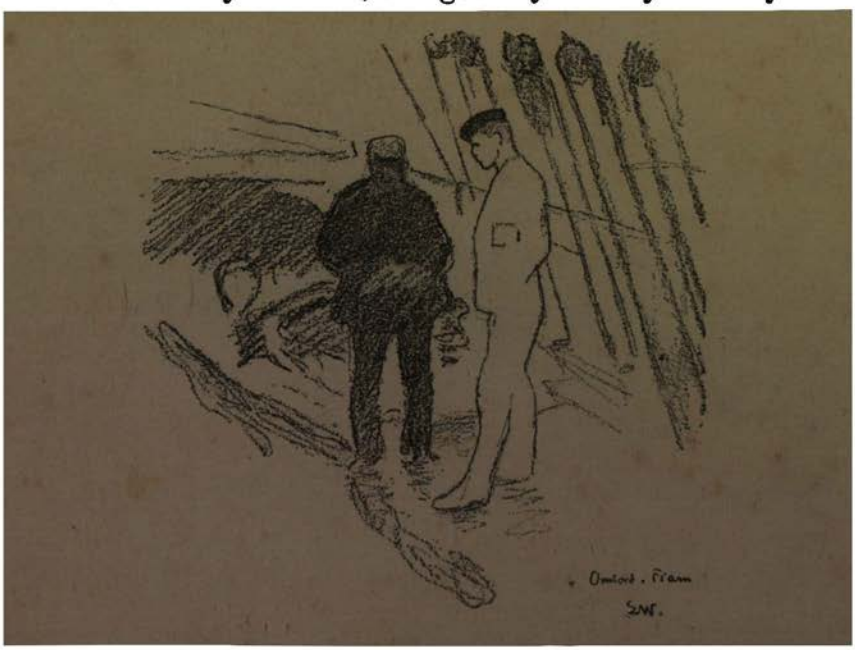
He said this with as much nonchalance as if he had been speaking of leaving behind an old overcoat, or a worn-out pair of boots.

'You must see and bring the *Fram* home with you,' I said.

'Oh, you may be sure we won't leave the vessel until we can't do anything else; but of course the ice might be so bad that we couldn't get her through, and then it would be annoying to have to lose more than necessary.'

That evening Nansen and Sverdrup accompanied me on board the *Vesteraalen*, and had a glass of hot toddy by way of stirrup cup.

A last hearty embrace, and good-bye. 'My love to your



wife! And be sure and give my love to Eva and Liv and all at home!'

'Promise me you'll take care of yourself, and not be too reckless—and a safe return to both you and the *Fram*! And God bless you, my dear friend!'

The steamer's bell rings for the last time. At midnight precisely the *Vesteraalen* starts for the south. I see Nansen and Sverdrup standing erect, side by side, in the stern boat

of the *Fram*. For a moment more I can distinguish Nansen's light waterproof; then the two figures seem to melt into one behind the veil of snow, thick as in mid-winter, which is sweeping over the sound. One last glimpse of the *Fram*. through the mist, and all is over.

When shall I see him again?

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